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FACTORS RELATED TO HUNTING AND FISHING PARTICIPATION IN THE UNITED STATES

PHASE IV: QUANTITATIVE ANALYSIS

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WESTERN ASSOCIATION OF FISH AND WILDLIFE AGENCIES
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Factors Related to Hunting and Fishing Participation in the United States

Phase IV: Quantitative Analysis

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Contents

Chapter I • Introduction & Methodology 1
- Introduction 1
- Methodology 2
  - Telephone Survey 2
  - Multivariate Analysis 5

Chapter II • Telephone Survey Results 9
- Public Opinion on Hunting, Fishing and Trapping 9
- Public Opinion on Hunter Education and Hunter Ethics 15
- Public Opinion on Angler Ethics 20
- Hunting Participation 22
- Hunting Satisfaction Among Active Hunters 26
- Primary Reason for Hunting 27
- Hunting Dissatisfaction Among Active Hunters 28
- Types of Hunting 34
- Social Aspects of Hunting 35
- Propensity to Hunt 37
- Opinion of State Fish and Wildlife Agency in Providing Hunting Opportunities 37
- Hunting Dissatisfaction Among Inactive Hunters 37
- Family Hunting Participation 47
- Fishing Participation 48
- Active Anglers 50
- Fishing Satisfaction Among Active Anglers 51
- Primary Reason for Fishing 53

Fishing Dissatisfaction Among Active Anglers 54
Types of Fishing 60
Social Aspects of Fishing 60
Propensity to Fish 61
Opinion of State Fish and Wildlife Agency in Providing Fishing Opportunities 62
Inactive Anglers 63
Family Fishing Participation 72

Chapter III • Multivariate Analysis Results 74
- Hunting 74
  - Hunting General Rates 74
  - Factors Associated with the Changes in Hunting 74
- Fishing 78
  - Fishing General Rates 78
  - Factors Associated with the Changes in Fishing 78

Appendix A • Multivariate Analysis Methodological Background 81
- Rural-Urban Residence 81
- Income Measures 82
- Background Information 83

Chapter I • Introduction & Methodology

Introduction

This telephone survey was conducted to quantify hunter, angler, ex-hunter and ex-angler opinions and attitudes regarding initiation to, participation in and desertion from hunting and fishing.

The goal of the multivariate analysis was to identify the factors associated with changes in hunting and fishing participation 1980-1990 using National Survey of Fishing, Hunting and Wildlife-Associated Recreation (NSFHWAR) interview screening data.

The telephone survey and multivariate analysis were complemented by an in-depth literature review, and a series of thirteen focus groups on hunting and fishing participation. From these four analyses, a comprehensive, final report on factors related to hunting and fishing participation and policy recommendations was developed to assist fish and wildlife managers increase hunter and angler satisfaction levels, thereby better meeting the needs of hunters and anglers, and allowing agencies to target deserters and potential deserters for information/education and public relations programs. Study results are reported through a five-volume series of publications: the literature review (Phase I), the hunting focus groups report (Phase II), the fishing focus groups report (Phase III), this survey results and the multivariate analysis report is Phase IV, and the final report, recommendations and discussion (Phase

V).

This project was funded by the U. S. Fish and Wildlife Service, Division of Federal Aid, Grant Agreement 14-48-0009-92-1252. We appreciate the assistance of many individuals, including Sylvia Cabrera and Columbus Brown, U. S. Fish and Wildlife Service; the Responsive Management Board of Directors -- Pat Graham, Montana Department of Fish, Wildlife and Parks; Todd Holbrook, Georgia Wildlife Resources Division; and Walt Gasson, Wyoming Game and Fish Department. We are indebted to the Western Association of Fish and Wildlife Agencies for their support, and the U. S. Fish and Wildlife Service and the International Association of Fish and Wildlife Agencies for their confidence in Responsive Management.

Methodology

Telephone Survey

The survey questionnaire was developed cooperatively between Responsive Management, the U.S. Fish and Wildlife Service and several state fish and wildlife agencies. A pre-test of the questionnaire was conducted which consisted of 50 completed interviews. Based on the pretest, several revisions and clarifications were made to the survey. A total of 2085 surveys were completed with randomly-selected adults. Sub-groups of the general population included: active hunters (n=376), inactive hunters (n=351), active anglers (n=942), and inactive anglers (n=529). Respondents were included in at most one of the three hunting, and at most one of the three fishing categories.

Results are based upon a random-digit dialing (RDD) computer-assisted telephone survey of U.S. residents, including Alaska and Hawaii, aged 18 or older. Telephones were selected as the preferred sampling medium since nearly all U.S. residents have access to a telephone. In addition, a central polling site allowed for rigorous quality control over the interviewers and data collection.

A random selection of telephone numbers and thereby households was purchased from Survey Sampling, Inc. (SSI) of Fairfield, Connecticut. This firm has patented computer programs that generate random numbers which are, in the opinion of most research professionals, of the highest quality. The approach used by SSI produces successful connections with random households 35% more often than other random digit sampling methods (SSI). Telephone numbers randomly generated in this fashion overcome bias against new listings and residents with unlisted telephone numbers.

To overcome bias toward those individuals most likely to answer the phone, questionnaire respondents were selected from each random household. The random selection procedure used within each household was the "last birthday" procedure. This means that when someone answered the phone, the interviewer asked to speak to the person over 18 that had the most recent birthday. This procedure was used because it is easy for the respondent to understand. Randomly-generated telephone numbers coupled with the "last birthday" method ensure that the survey results can be projected to reflect the adult, resident population of the U.S. as a whole.

Throughout this report, findings are reported at a 95% confidence interval with a sampling error of ±2%, for a sample of 2085. This means that if this survey was administered 100 times, to different samples that were selected in the same fashion, 95 of the surveys' findings would fall within ±2% of each other. Sampling errors increase when referring to sub-populations of the whole sample; specifically, active hunters - ±5%, inactive hunters - ±5%, active anglers - ±3%, and inactive anglers - ±4%.

Some response distributions may not add to 100% exactly due to rounding, while a few questions allowed for multiple responses. Those questions which accepted multiple responses are noted specifically. Also, strongly and moderately statements may not add to the total reported because of rounding.

Responsive Management (RM) maintains its own telephone interviewing facilities in-house. These facilities are staffed by interviewers with experience conducting computer-assisted telephone interviews on the subject of natural resources and outdoor recreation for government fish and wildlife agencies and private conservation organizations. A total of 24 different interviewers collected the data for this project. RM conducted the telephone interviews utilizing "Questionnaire Programming Language 3.0." Project supervisors randomly monitored the telephone workstations without the interviewers' knowledge to evaluate the performance of each interviewer.

RM has designed a telephone interviewing facility that stresses the importance of highly-trained telephone interviewers who work under the close supervision of RM professional staff. The project supervisor edits each completed survey to check for clarity, understanding, completeness, and form. To ensure the data collected is of the highest quality, the interviewers are trained according to the standards established by the Council of American Survey Research Organizations. Method of instruction includes lecture and role-playing. The project supervisor conducts project briefings with the interviewing crew prior to working on the specific project. Interviewers are instructed on the following: study goals and objectives, type of study, handling of survey questions, interview length, termination points and qualifiers for participation, reading of interviewer instructions, reading of survey, review skip patterns, probing and clarifying techniques necessary for specific questions on the survey instrument.

Interviews were conducted Monday through Friday from 9:00 a.m. to 9:00 p.m. (local times) and on Saturday from 10:00 a.m. to 4:00 p.m. (local times). A five-callback design was used to maintain the representativeness of the sample, avoid bias toward people easy-to-reach by telephone and provide an equal opportunity for all to participate (in some instances, numbers were called up to eight times). Subsequent calls are placed at different times of the day and different days of the week. This intensive call-back procedure is a good technique for boosting response rates.

The software used for data collection was QPL version 3.0 (National Technical Information Services 1991). QPL is a comprehensive system for computer-assisted telephone interviewing. The survey data is entered into the computer as the interview is being conducted, eliminating manual data entry after the completion of the interviews. The survey instrument is programmed so that QPL branches, codes, and substitutes phrases in the survey based upon previous responses to ensure the integrity and consistency of data collection.

Multivariate Analysis

Screener data from the NSFHWAR was used to estimate participation rates which require random samples of nonparticipants as well as participants. Although changes in methodology (annual recall versus trimester recall) have taken place between the 1980 and 1990 NSFHWARs, the screener surveys continue to use annual recall for the key indicators of participation. Thus, data are comparable across surveys.

Sampling from Data Sets

The screening data sets (FH2) consist of 340,032 (1980), 273,485 (1985), and 263,591 (1990) person records; the 1980 file includes records for noninterviewed households, while the later 2 files do not. Each file exceeded the capacity of the on-line "work" storage space (40,000 blocks on VAX-VMS system), and could be stored for only a few hours on the larger "temporary" storage area. SPSS system files required for subsequent analyses would not have fit on work storage space, even if compressed, and could not be combined for analysis, producing SPSS system files that exceed even generous on-line storage capacities. While state-level or other small-area analyses would require all available cases for precise estimates, a small random sample produces good estimates at the national level.

We used a random-number generator to select a 3% simple random sample of records from each screening interview. Noninterviewed households (1980 only) were excluded in the analysis phase. Records for persons under age 16 were excluded after consistency checks had been conducted.

To determine the stability of sample estimates, a second 3% random sample was selected and estimates were compared for the hunting and fishing participation and socioeconomic variables across the 3 survey years. The estimates were extremely similar across the 2 independent samples. Standard errors would not be appreciably reduced (with resulting increases in statistical power) with a larger random sample.

The number of records sampled was 10,144 (1980), 8,069 (1985), and 7,839 (1990). When noninterviewed households were excluded, the 1980 records were reduced to 9,322. The number of persons 16 and older (analytic samples) was 7,508 (1980); 6,079 (1985); and 5,390 (1990).

Analysis Strategy

Consistency checks and data comparability

Samples for each survey year were analyzed separately to determine data quality. Skip patterns were almost perfectly consistent, though not well documented in the codebook and accompanying materials. (This was particularly true for skips based on age.) Only a few (less than 5) cases had inconsistent information on any hunting or fishing data.

The major problem was inconsistent questions across the 3 surveys. It was determined that the only comparable fishing/hunting participation indicators that could be used with confidence were whether the respondent hunted or fished, during the past year or during the past 2 years. Even these variables had to be constructed using different series of questions for each survey, and it is not clear whether varying methods of collecting such information lead to different reports. Nevertheless, it is reasonable to be confident of comparability for these variables and most of the socioeconomic variables in the screener survey.

Two major problems of data comparability are discussed in Appendix A. Discrepancies in rural-urban residence measures were not reconciled, and therefore unfortunately were not included in the multivariate analysis across years. The construction of approximately equivalent income measures was successful and is outlined in Appendix A.

Interaction tests

Exhaustive tests were constructed for interaction between effects of socioeconomic variables across time and for differences between males and females. If effects of age, for example, differ across surveys, then straightforward predictions cannot be made of change in hunting and fishing participation from the pooled effect of age on hunting or fishing and changes in age across survey years. In most cases effects of independent variables were not different across survey year (i.e., did not interact with year of survey), a necessary basis for the summary multivariate analyses. Determinants of hunting and fishing participation vary by sex, so separate models are presented for males and females.

Methods and Models

Ordinary least squares regression was used to predict hunting and fishing participation for the three survey years combined. Models included survey year (1985, 1990 contrasted to 1980), age, education, income, region of residence, marital status, race, and rural place of residence at 16. As noted above (and described in Appendix A), we were unable to include current rural/urban residence in the model because measures were not comparable across surveys.

Tables on pages 77 and 80 present the OLS understandardized regression coefficients (slope representing the effect of each independent variable on participation) and the amount of change in each independent variable from 1980 to 1990. These two values are multiplied to estimate the 10-year effect of each independent variable, i.e., the amount of change in hunting or fishing that can be attributed to changes in the independent variable.

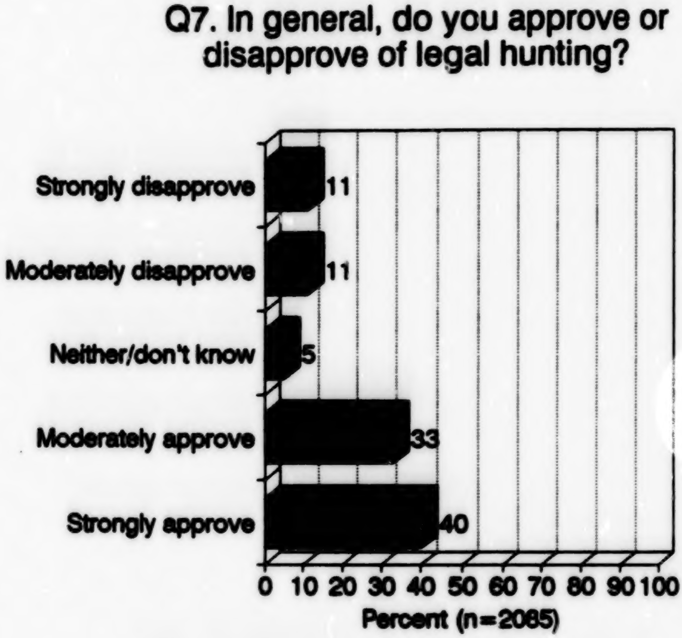
Chapter II •
Telephone Survey Results

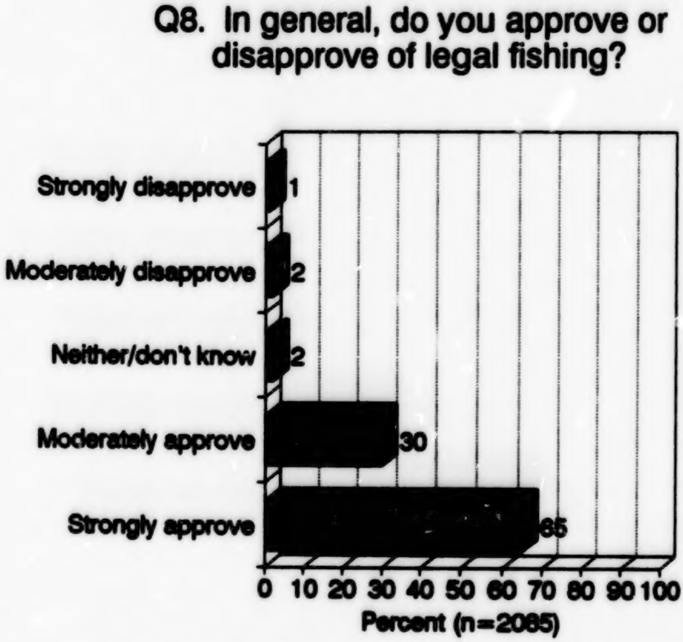
Public Opinion on Hunting, Fishing and Trapping

General population respondents were first asked about their general opinion on hunting, fishing and trapping. When asked, "In general, do you approve or disapprove of legal hunting,?" 40% of respondents strongly approved and 33% moderately approved; a total of 73% approved of legal hunting. Eleven percent moderately disapproved and 11% strongly disapproved; a total of 22% disapproval. Five percent did not know or had no opinion.

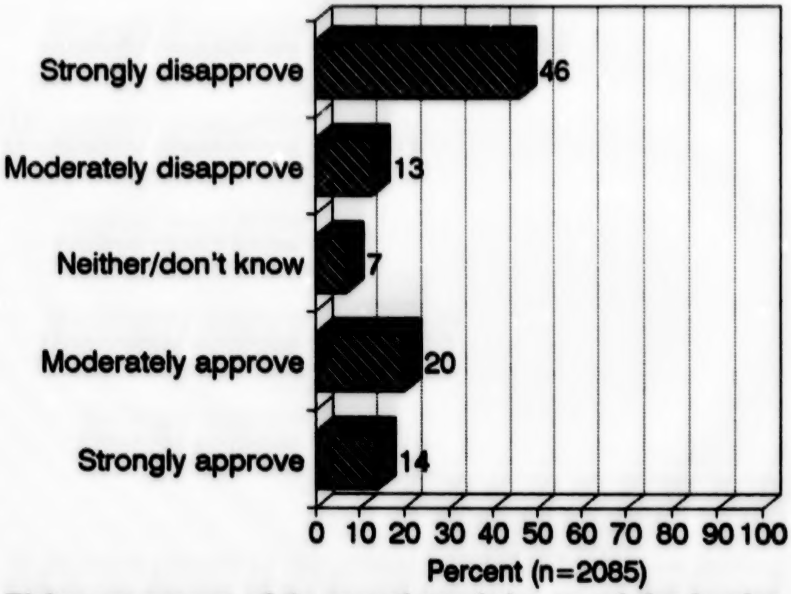
Sixty-five percent of general population respondents strongly approved and 30% moderately approved of legal, recreational fishing (95% overall approved). Two percent moderately disapproved and 1% strongly disapproved of legal, recreational fishing (3% total disapproved). Two percent did not know or had no opinion.

Fourteen percent of general population respondents strongly approved, 20% moderately approved, 13% moderately disapproved and 46% strongly disapproved of legal trapping (7% did not know or had no opinion). If asked, trapping was defined as capturing wild animals in traps for the primary purpose of obtaining their fur.


Q7. In general, do you approve or disapprove of legal hunting?
Strongly disapprove
11
Moderately disapprove
11
Neither/don't know
5
Moderately approve
33
Strongly approve
40
0 10 20 30 40 50 60 70 80 90 100
Percent (n=2085)

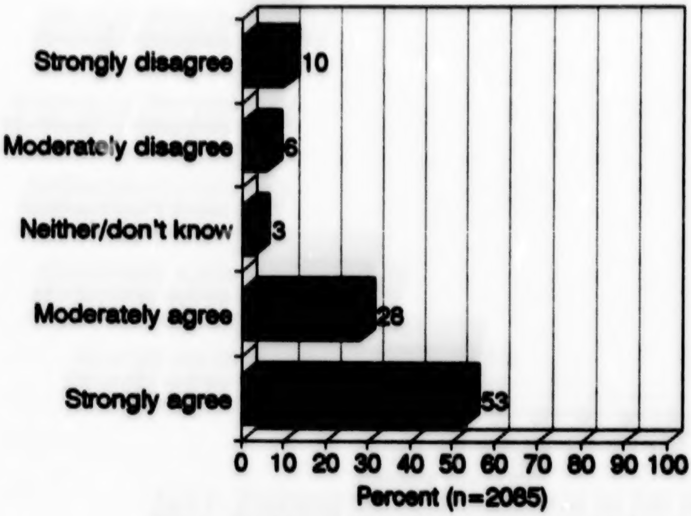

Q8. In general, do you approve or disapprove of legal fishing?
Strongly disapprove
1
Moderately disapprove
2
Neither/don't know
2
Moderately approve
30
Strongly approve
65
0 10 20 30 40 50 60 70 80 90 100
Percent (n=2085)

Q9. In general, do you approve or or disapprove of legal trapping?

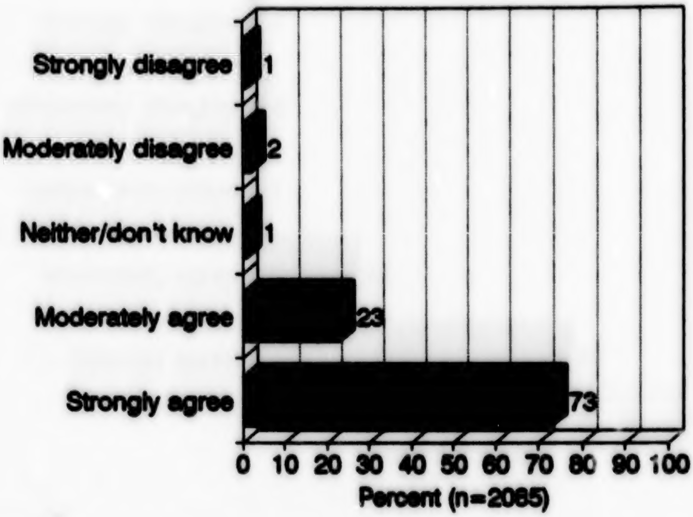


Eighty-one percent of the general population agreed that hunting should continue to be legal. Fifty-three percent strongly agreed, 28% moderately agreed, 3% neither agreed nor disagreed, 6% moderately disagreed and 10% strongly disagreed with the statement, "Hunting should continue to be a legal activity." Seventy-three percent strongly agreed, 23% moderately agreed, 1% neither agreed nor disagreed, 2% moderately disagreed and 1% strongly disagreed with the statement, "Fishing should continue to be a legal activity."

Thirty percent of the general population strongly agreed, 29% moderately agreed (total of 59% agreed), 5% neither agreed nor disagreed, 13% moderately disagreed and 24% strongly disagreed with the statement, "In general, hunting is a safe recreational activity." Seventy-two percent of the general population strongly agreed, 25% moderately agreed (total of 96% agree), 1% neither

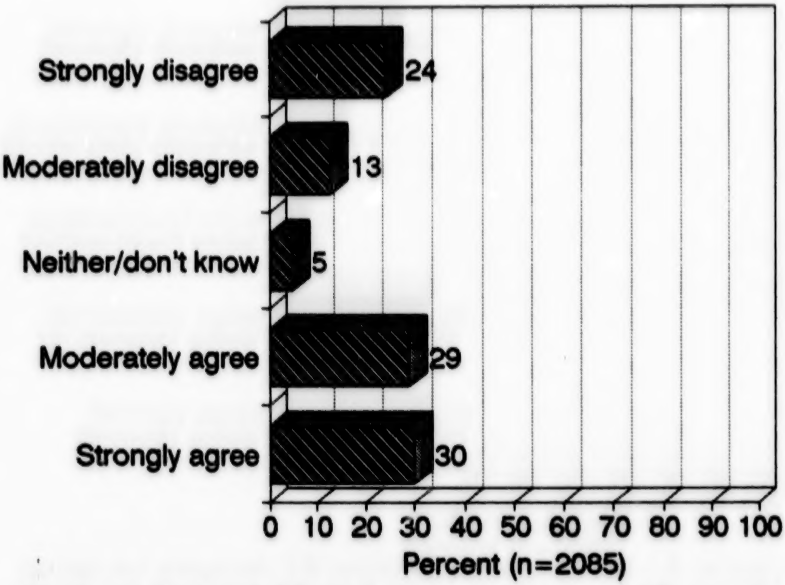


Q10. Hunting should continue to be a legal activity.



Q11. Fishing should continue to be a legal activity.

Q12. In general, hunting is a safe recreational activity.

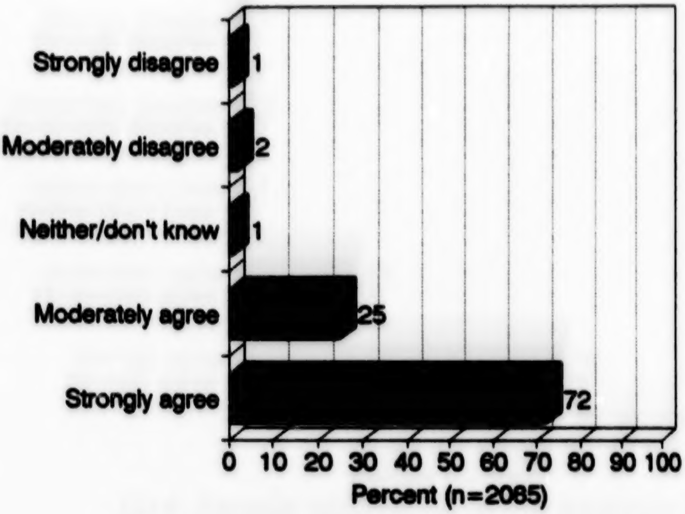


agreed nor disagreed, 2% moderately disagreed and 1% strongly disagreed (total of 3% disagreed) with the statement, "In general, fishing is a safe recreational activity."

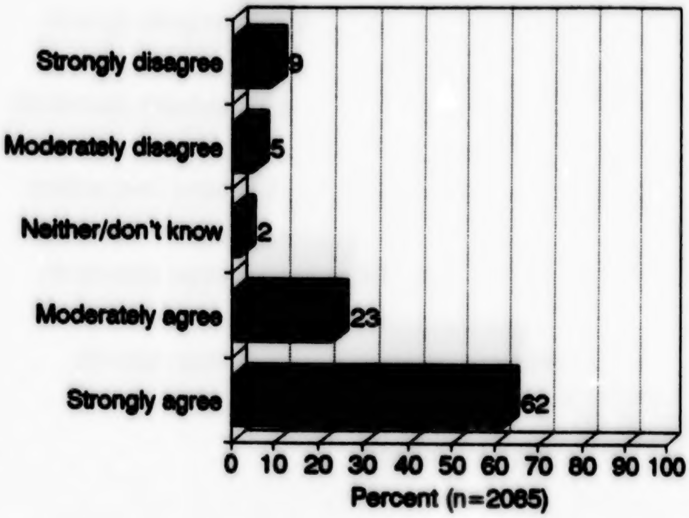
General population respondents were then asked if they agreed or disagreed with the statement, "People should have the freedom to choose to hunt if they want to." Sixty-two percent strongly agreed, 23% moderately agreed (total of 84% agreed), 2% neither agreed nor disagreed or did not know, 5% moderately disagreed and 9% strongly disagreed (total of 14% disagreed).

Half of the respondents stated either a lot of hunters or a moderate amount of hunters drink alcohol while hunting. Twenty-five percent stated a lot of hunters and 25% stated a moderate amount of hunters drink alcohol while hunting. The question was worded as follows, "In general, do you think a lot, a moderate amount, a

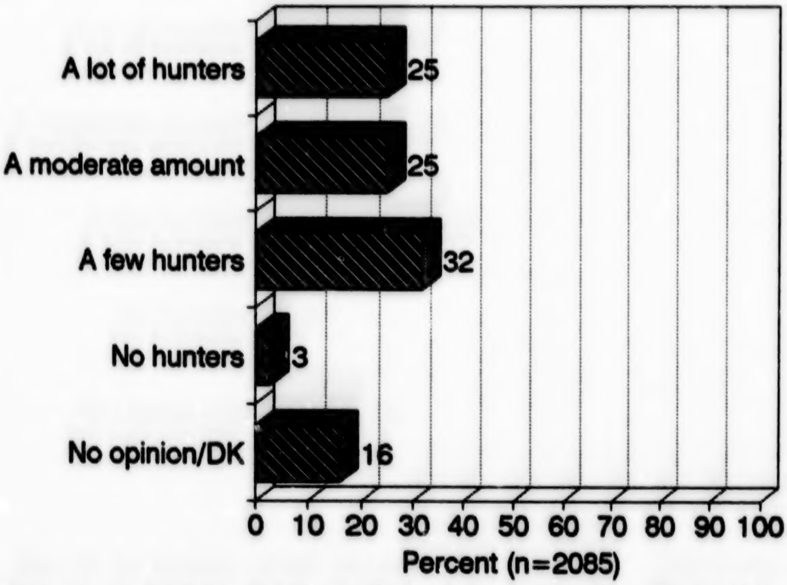
Q13. In general, fishing is a safe recreational activity.



Q14. People should have the freedom to choose to hunt if they want to.



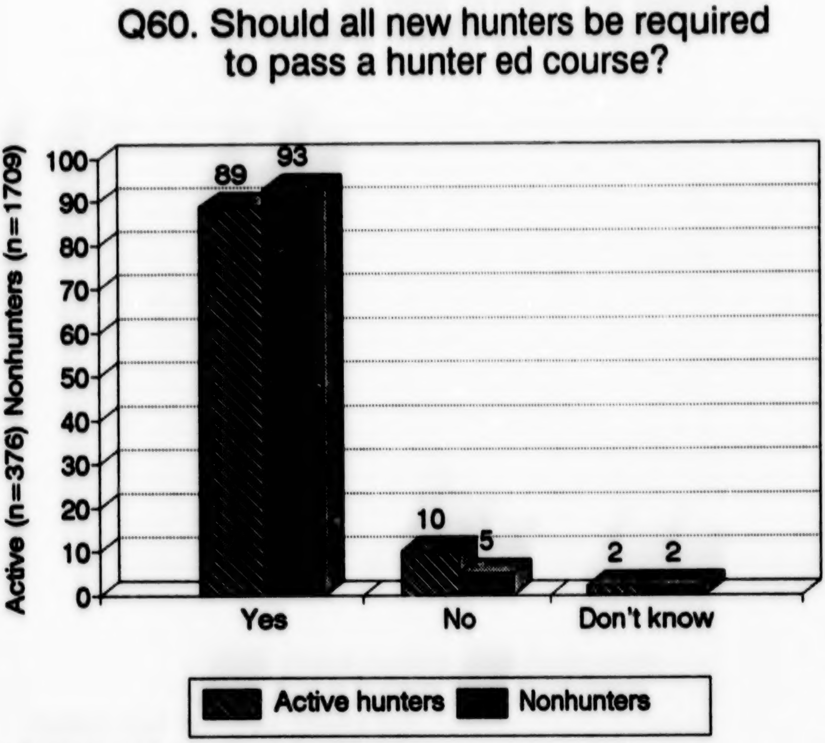
Q15. In general, how many hunters drink alcohol while hunting?



few or no hunters drink alcohol while hunting?" Thirty-two percent stated a few hunters drink alcohol while hunting and 3% stated no hunters drink alcohol while hunting (16% had no opinion or did not know).

Public Opinion on Hunter Education and Hunter Ethics

All respondents were asked if all new hunters should be required to pass a hunter education course. Ninety-two percent of the general population said yes, all new hunters should be required to pass a hunter education course while 6% said no, they should not. Among active hunters, 89% said yes, all new hunters should be required to pass a hunter education course while 10% of active

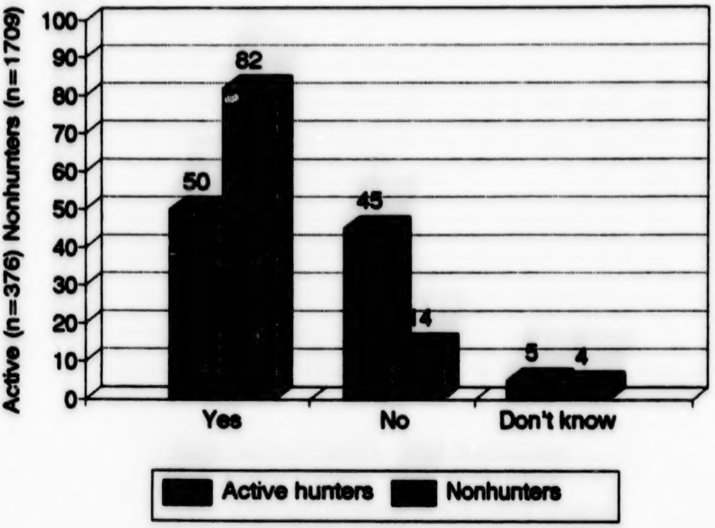


hunters said no, they should not.

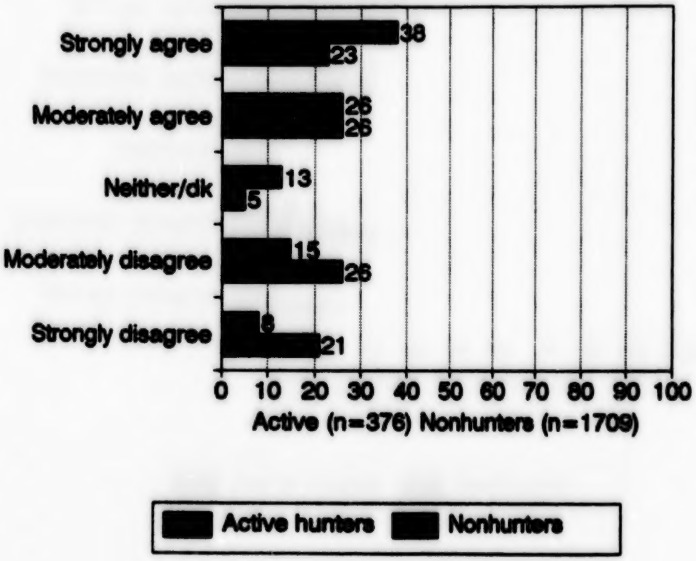
General population respondents were then asked if all current hunters should be required to pass hunter education refresher courses. Seventy-seven percent said yes and 19% said no, while 4% did not know. Fifty percent of active hunters said yes, all current hunters should be required to pass hunter education refresher courses, while 45% of active hunters said no they should not.

Almost two-thirds (62%) of the general population respondents felt that a lot of hunters violate hunting laws or practice unsafe behavior while hunting. Thirty-five percent strongly agreed that a lot of hunters violate hunting laws or practice unsafe behavior while hunting, 26% moderately agreed, 12% neither agreed nor

Q61. Should all current hunters be req. to pass a refresher hunter ed course?



Q62. Opinion that a lot of hunters violate hunting laws.

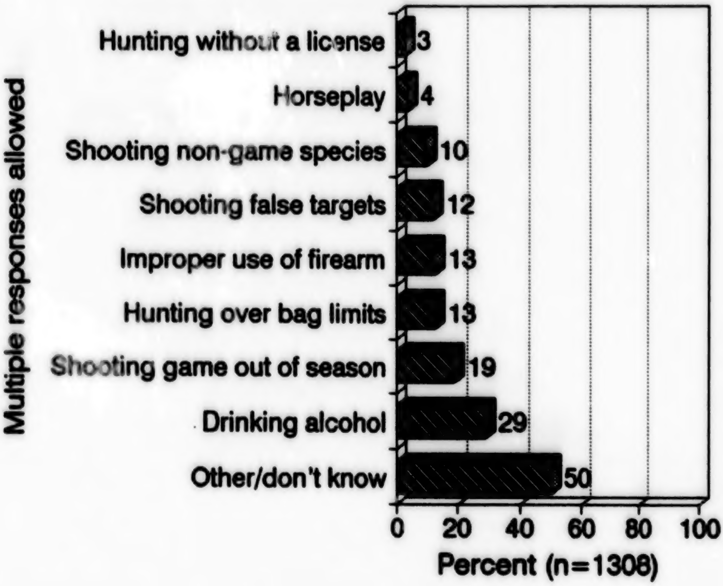


disagreed, 17% moderately disagreed and 10% strongly disagreed.

Among active hunters, 23% strongly agreed that a lot of hunters violate hunting laws or practice unsafe behavior while hunting, 26% moderately agreed, 5% neither agreed nor disagreed, 26% moderately disagreed and 21% strongly disagreed.

Respondents who strongly agreed, moderately agreed, or neither agreed nor disagreed that a lot of hunters violate hunting laws or practice unsafe behavior while hunting were asked which laws hunters violate most often, or which unsafe behaviors hunters practice most often. Twenty-nine percent stated drinking alcohol, 19% stated shooting game out of season, 13% stated improper use of a firearm, 13% stated hunting over bag limits, 12% stated shooting false targets, 10% stated shooting nongame species, 4% stated intentional improper use of a firearm, 4% stated horseplay,

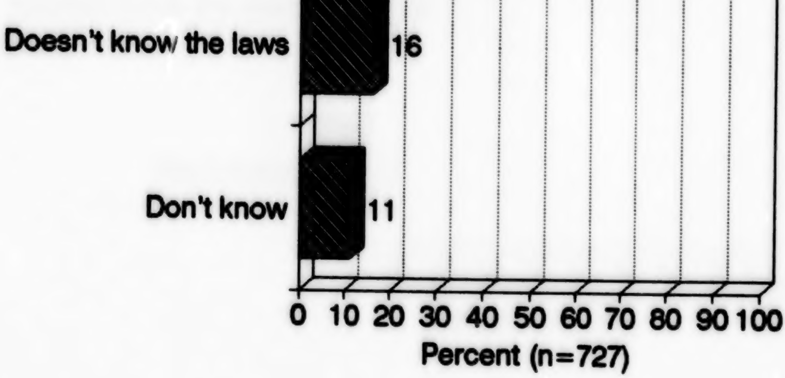
Q63. Which laws do hunters violate most often?



and 3% cited hunting without a license.

Respondents were then asked "In general, when a hunter violates a hunting law is it because the hunter does not know what the law is or do you feel the hunter knows what the law is but violates it anyway?" Seventy-four percent felt the hunter knows the laws, but violates them anyway. Sixteen percent felt the hunter breaks laws because the hunter does not know what the laws are. Eleven percent did not know.

Q65. When a hunter violates a hunting law, do you think the hunter...



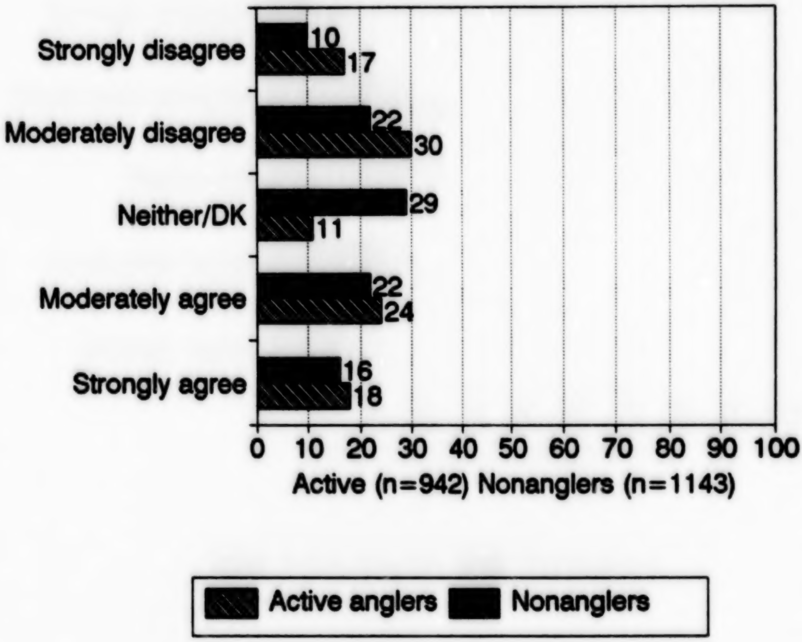
Public Opinion on Angler Ethics

Forty percent of the general population felt that a lot of fisherman violate fishing laws. Seventeen percent strongly agreed that a lot of fisherman violate fishing laws, 23% moderately agreed, 21% neither agreed nor disagreed, 26% moderately disagreed and 13% strongly disagreed.

Among active anglers, 18% strongly agreed that a lot of fisherman violate fishing laws, 24% moderately agreed, 11% neither agreed nor disagreed or did not know, 30% moderately disagreed and 17% strongly disagreed.

Respondents who strongly agreed, moderately agreed, or neither

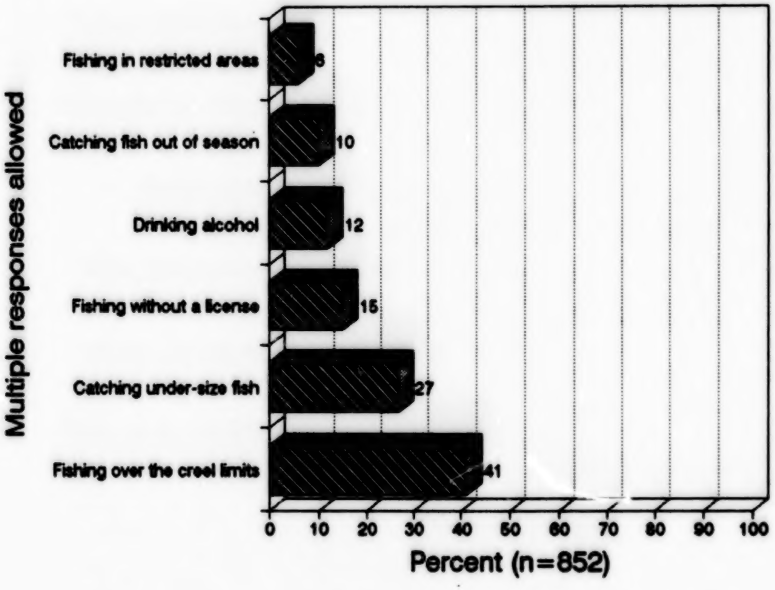
Q139. Opinion that a lot of fishermen violate fishing laws.

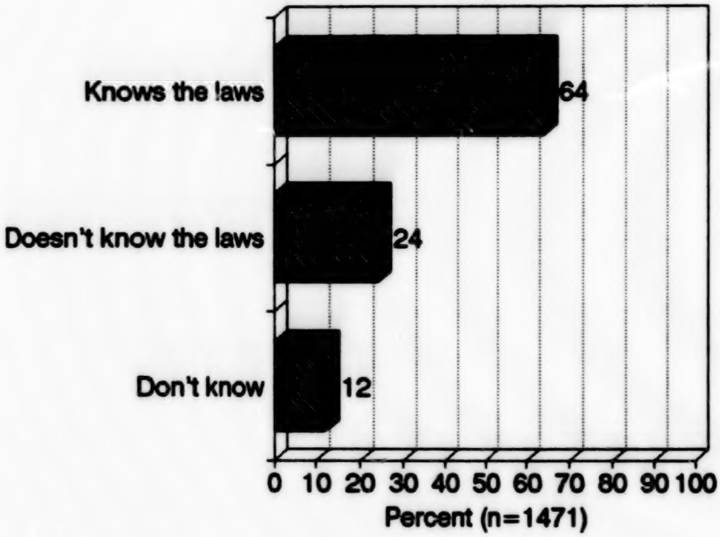


agreed nor disagreed that a lot of fisherman violate fishing laws were asked which laws fisherman violate most often. Forty-one percent stated fishing over the creel limits, 27% said catching under-sized fish, 15% said fishing without a license, 12% said drinking alcohol, 10% said catching fish out of season and 6% said fishing in restricted areas.

Respondents who felt anglers broke laws were then asked, "In general, when an angler violates a fishing law is it because the angler does not know what the law is or do you feel the angler knows what the law is but violates it anyway?" Sixty-four percent felt that the angler knows the laws, but violates them anyway. Twenty-four percent felt that the reason anglers break laws is because the angler does not know what the laws are. Twelve percent did not know.

Q140. Which laws do fishermen violate most often?





Q142. When an angler violates a fishing law, do you think the angler...

Hunting Participation

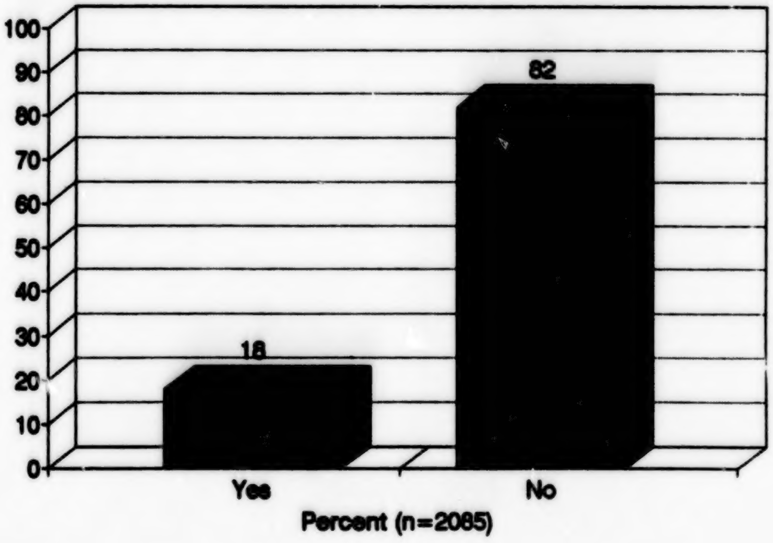
Thirty-seven percent of respondents indicated they had hunted when they were a child (15 years of age and younger). Of the individuals that indicated they had not hunted as a child, 11% indicated they had accompanied someone who was hunting.

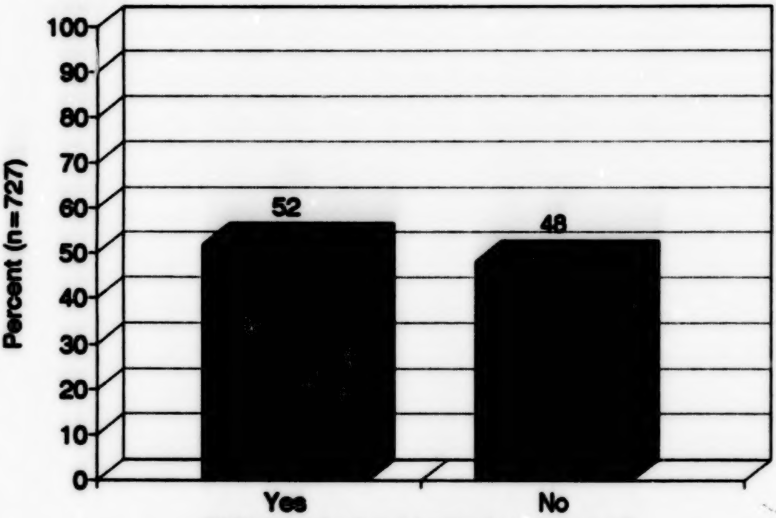
Thirty-five percent of respondents hunted since they were 16 years old. Of these individuals who had hunted since they were 16 years old, 33% had hunted more than once.

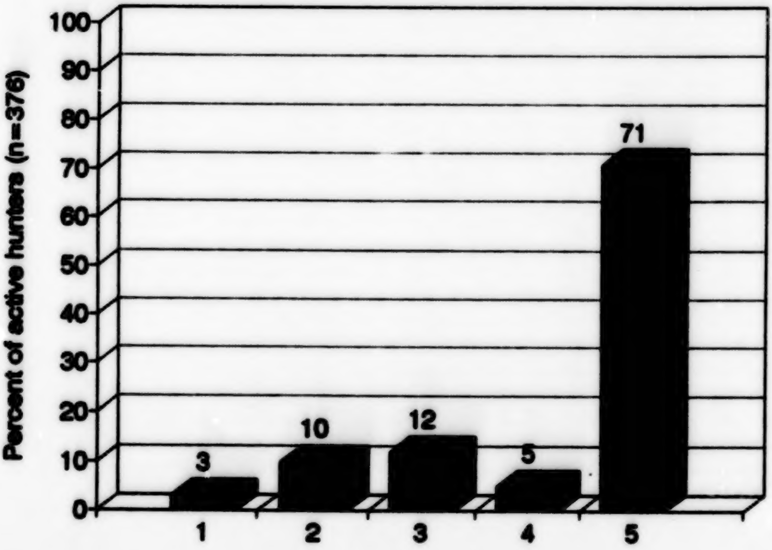
Eighteen percent of general population respondents indicated that they had hunted in the past two years. For this report, these individuals will be referred to as active hunters. Of these active hunters, 3% hunted only one year during the past five years, 10% hunted two of the past five years, 12% hunted three of the past five years, 5% hunted four of the past five years and 71% indicated they had hunted every year during the past five years. Active hunters were then asked within the last five years if their number of trips or the level of their hunting activity had increased, stayed about the same, or decreased. Twenty-three percent indicated their level of hunting activity increased, 48% stated it had stayed about the same while 29% stated their level of hunting activity has decreased.

The most frequent response when asked the number of days active hunters had hunted during the past 12 months was 30 days. Twenty-seven percent hunted one to five days, 17% hunted six to ten days, 19% hunted eleven to twenty days, 16% hunted twenty-one to thirty days and 13% hunted thirty-five or more days.

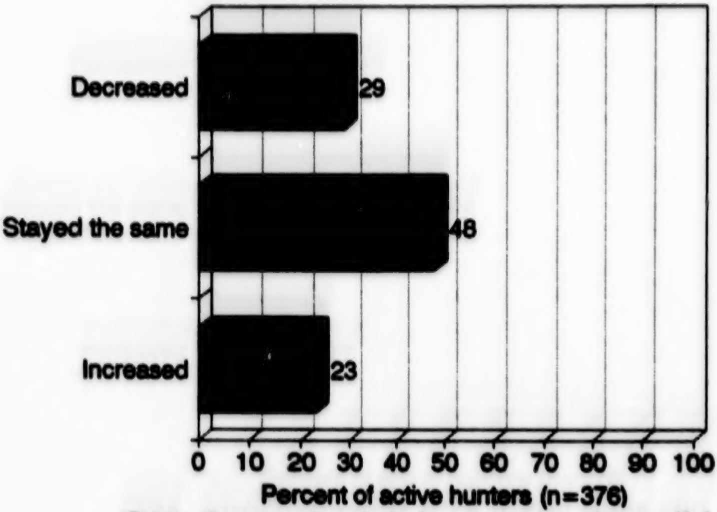
Q21. Have you hunted in the past two years?



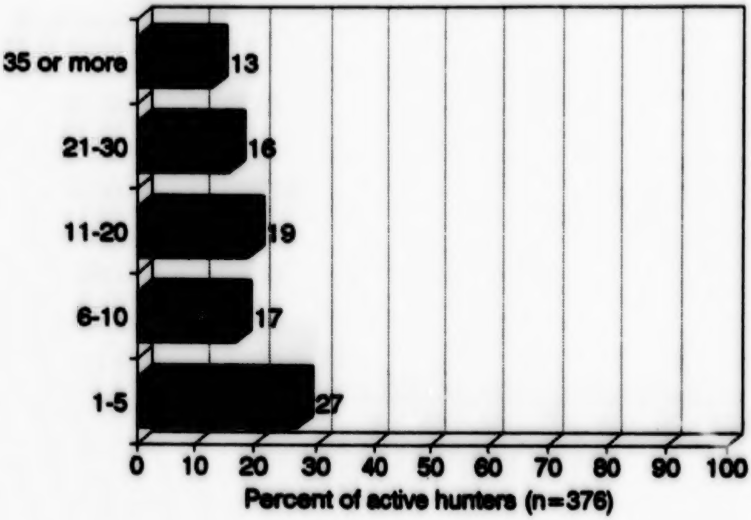

Q21. Have you hunted in the past two years?


Of those who have hunted since age 16
Q22. Of the past five years, how many years did you hunt?

Q23. In the last 5 years, has the level of your hunting or number of trips...

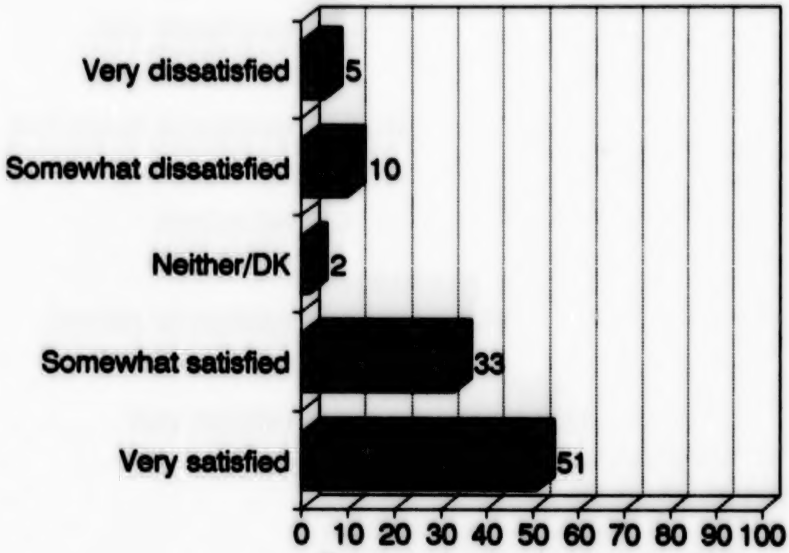


Q24. Approximately how many days did you hunt during the past 12 months?



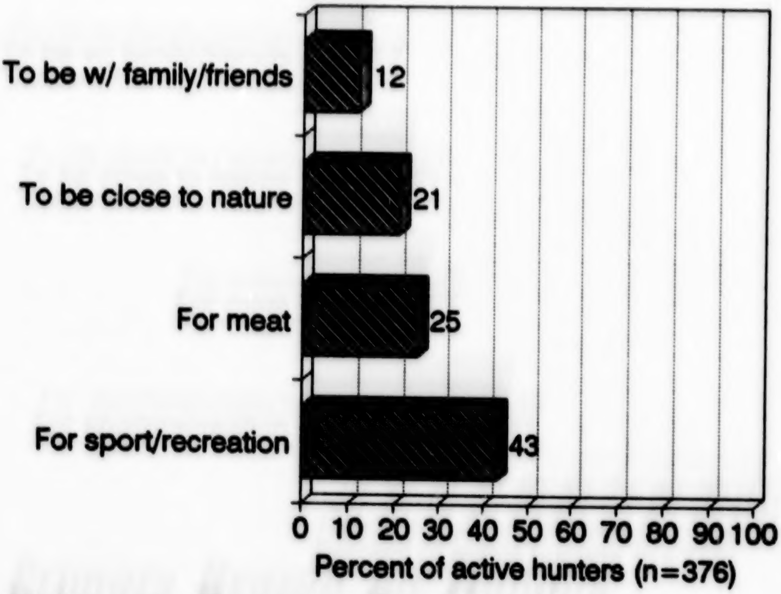
Hunting Satisfaction Among Active Hunters

Over half (51%) of active hunters were very satisfied overall with their hunting experiences over the past 2 years. One third were somewhat satisfied, 2% did not know or were neither satisfied nor dissatisfied, 10% were somewhat dissatisfied and 5% were very dissatisfied.



Q25. In the past 2 yrs, how satisified were you with your hunting experiences?

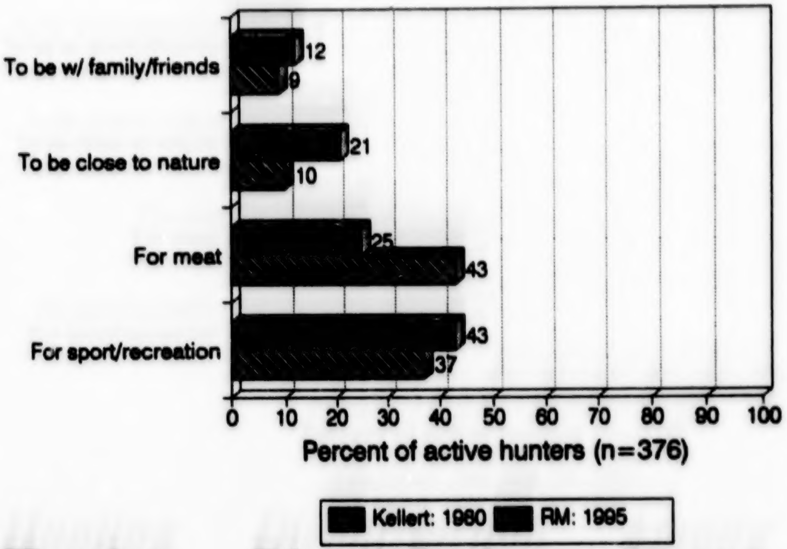
Q26. What was your most important reason for hunting in the past 2 years?



Primary Reason for Hunting

The next question addressed primary reasons for hunting among active hunters. Four reasons for hunting were read and respondents were asked to select one as their most important reason for hunting in the past 2 years. One quarter hunted primarily for meat, 12% to be with friends and family, 43% for the sport and recreation, and 21% to be close to nature. This exact question was asked by Dr. Steven Kellert in 1980. In Kellert's survey, 43% hunted primarily for the meat, 9% to be with friends and family, 37% for the sport and recreation, and 11% to be close to nature.

Q26. What was your most important reason for hunting in the past 2 years?



Hunting Dissatisfaction Among Active Hunters

The next series of questions presented potential dissatisfactions with hunting, and active hunters were asked if the factor took away from their enjoyment of hunting over the past 2 years. Those responding that a factor took away from their enjoyment of hunting were asked if the factor strongly or moderately took away from their enjoyment.

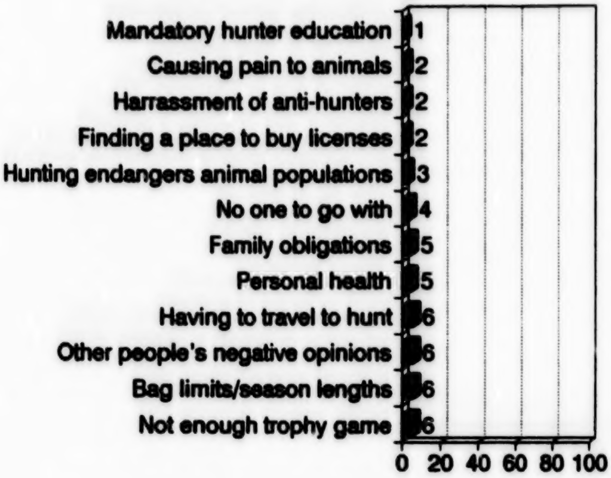
Eighty-one percent stated that their personal health had not taken away from their enjoyment of hunting; 13% stated this had taken away moderately and 5% stated this had taken away strongly from their enjoyment of hunting. Sixty-five percent stated that too many hunters in the field had not taken away from their enjoyment of hunting; 24% stated this had taken away moderately and 11%

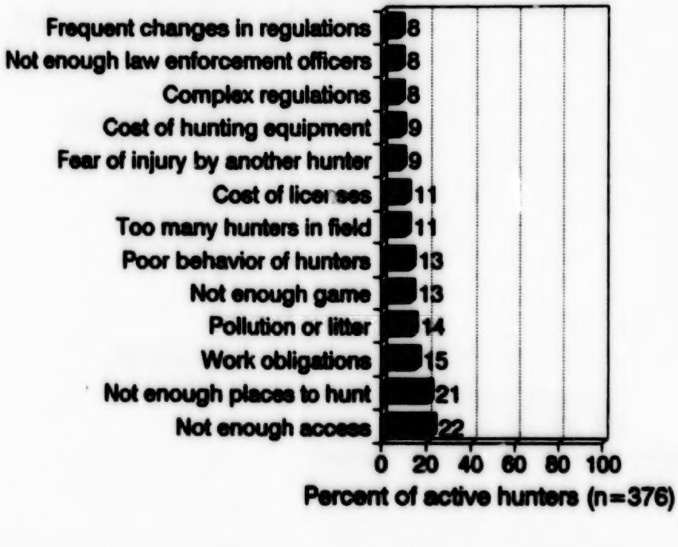
stated this had taken away strongly from their enjoyment of hunting. Eighty-four percent stated that restrictive bag limits or season lengths had not taken away from their enjoyment of hunting; 10% stated this had taken away moderately and 6% stated this had taken away strongly from their enjoyment of hunting. Seventy-nine percent stated that not having anyone to go with had not taken away from their enjoyment of hunting; 18% said this had taken away moderately and 4% said this had taken away strongly from their enjoyment of hunting; Eighty percent said that having to travel in order to hunt had not taken away from their enjoyment of hunting; 13% stated this had taken away moderately and 6% stated this had taken away strongly from their enjoyment of hunting. Fifty-six percent said that not having enough places to hunt had not taken away from their enjoyment of hunting; 22% stated this had taken away moderately and 21% stated this had taken away strongly from their enjoyment of hunting. Fifty-four percent said that not having enough access to places to hunt had not taken away from their enjoyment of hunting; 24% stated this had taken away moderately and 22% stated this had taken away strongly from their enjoyment of hunting. Eighty-six percent said that other people's negative opinions toward them as a hunter had not taken away from their enjoyment of hunting; 8% stated this had taken away moderately and 6% stated this had taken away strongly from their enjoyment of hunting. Ninety-four percent said that harassment from anti-hunters in the field had not taken away from their enjoyment of hunting; 4% stated this had taken away moderately and 2% stated this had taken away strongly from their enjoyment of hunting. Eighty-five percent said that not having enough trophy animals to hunt had not taken away from their enjoyment of hunting; 9% stated this had taken away moderately and 6% stated this had taken away strongly from their enjoyment of hunting. Sixty-nine percent said that not having enough game animals to hunt in general had not taken away from their enjoyment of hunting; 19% stated this had taken away moderately and 13% stated this had taken away strongly from their enjoyment of hunting. Seventy-five percent said that complex regulations had not taken away from their enjoyment of hunting; 17% stated this had taken away moderately and 8% stated this had taken away strongly from their enjoyment of hunting. Seventy-six percent of active hunters said that frequent changes in regulations had not taken away from their enjoyment of hunting; 17% stated this had taken away moderately and 8% stated this had taken away strongly from their enjoyment of hunting. Eighty-two percent said that not enough law enforcement officers where they hunt had not taken away from their enjoyment of hunting; 10% stated this had taken away moderately and 8% stated this had taken away strongly from their enjoyment of hunting. Seventy-six percent said that a fear of being injured by another hunter had not taken away from their enjoyment of hunting; 15% stated this had taken away moderately and 9% stated this had taken away strongly from their enjoyment of hunting. Sixty-one percent said that poor behavior of other hunters had not taken away from their enjoyment of hunting; 26% stated this had taken away moderately and 13% stated this had taken away strongly from their enjoyment of hunting. Eighty-eight percent said that the feeling of causing pain to animals had not taken away from their enjoyment of hunting; 9% stated this had taken away moderately and 2% stated this had taken away strongly from their enjoyment of hunting. Seventy-three percent said that the cost of hunting licenses had not taken away from their enjoyment of hunting; 16% stated this had taken away moderately and 11% stated this had taken away strongly from their enjoyment of hunting. Ninety-four percent said that finding a place to buy hunting licenses had not taken away from their enjoyment of hunting; 3% stated this had taken away moderately and 2% stated this had taken away strongly from their enjoyment of hunting. Seventy-six percent said that the cost of hunting equipment had not taken away from their enjoyment of hunting; 15% stated this had taken away moderately and 9% stated this had taken away strongly from their enjoyment of hunting. Seventy-one percent of active hunters said that pollution or litter where they hunt had not taken away from their enjoyment of hunting; 15% stated this had taken away moderately and 14% stated this had taken away strongly from their enjoyment of hunting. Eighty-six percent said that having to take a mandatory hunter education class had not taken away from their enjoyment of hunting; 2% stated this had taken away moderately and 1% stated this had taken away strongly from their enjoyment of hunting. This question did not apply to 11% of active hunters. Seventy-seven percent said that family obligations had not taken away from their enjoyment of hunting; 18% stated this had taken away moderately and 5% stated this had taken away strongly from their enjoyment of hunting. Fifty-seven percent said that work obligations had not taken away from their enjoyment of hunting; 27% stated this had taken away moderately and 15% stated this had taken away strongly from their enjoyment of hunting. Ninety-one percent said that a perception that hunting is endangering animal populations had not taken away from their enjoyment of hunting; 6% stated this had taken away moderately and 3% stated this had taken away strongly from their enjoyment of hunting.

Overall, the following took away most from hunting satisfaction for active hunters: not enough access (took away strongly from hunting satisfaction for 22% of the active hunters), not enough places to hunt (took away strongly from hunting satisfaction from 21% of the active hunters), work obligations (took away strongly from hunting satisfaction from 15% of the active hunters), and pollution or litter (took away strongly from hunting satisfaction from 14% of the active hunters). It is important to note that the highest percentage of a reason for dissatisfaction that had "taken away strongly" was only 22%.

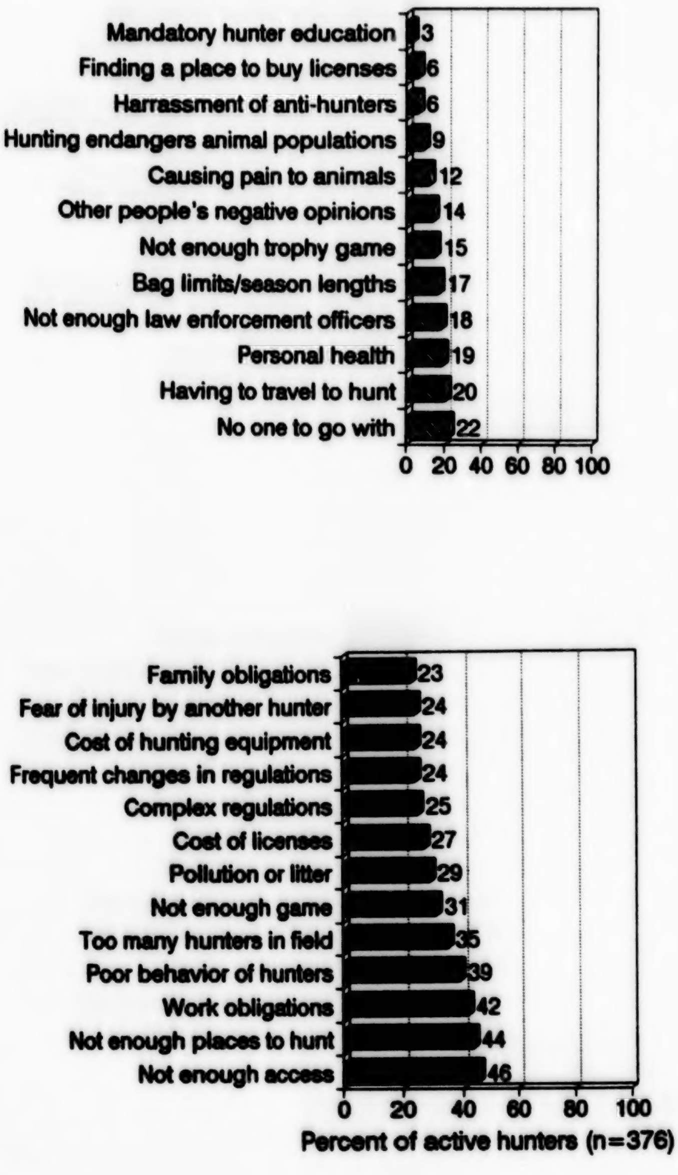
The following were the least important reasons taking away from hunting satisfaction among active anglers: mandatory hunter education (took away strongly from hunting satisfaction for 1% of the active hunters), the feeling of causing pain to animals (took away strongly from hunting satisfaction for 2% of the active hunters), harassment from anti-hunters in the field (took away strongly from hunting satisfaction for 2% of the active hunters) and finding a place to buy hunting licenses (took away strongly from hunting satisfaction for 2% of the active hunters).

Q27-51. The following issues strongly took away from hunting satisfaction:





Q27-51. The following issues took away from hunting satisfaction:

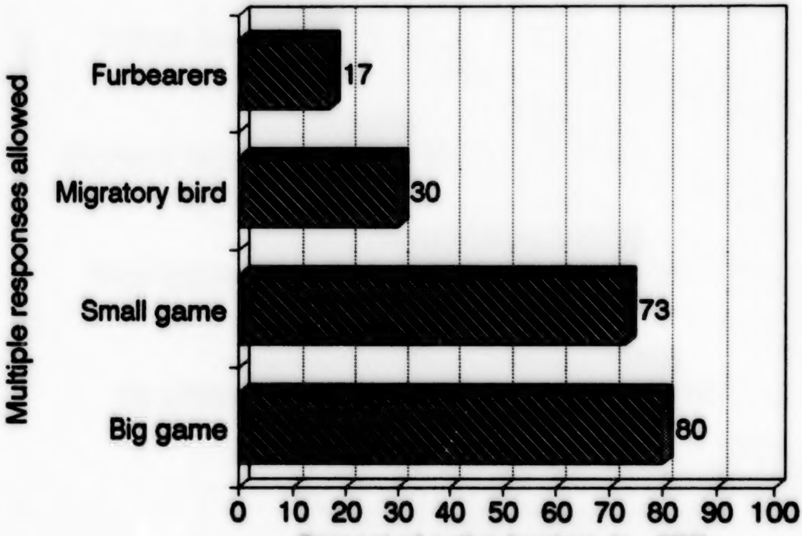


Types of Hunting

Active hunters were asked if they had hunted furbearers, migratory birds, small game or big game during the past two years. Respondents were allowed to name more than one game category. Seventeen percent hunted furbearers (fox/beaver/coyote/raccoon/muskrat/nutria/mink), 30% had hunted migratory birds or waterfowl (dove/waterfowl/bandtailed pigeon), 73% hunted small game (rabbit/quail/grouse/partridge/pheasant/squirrel), and 80% hunted big game (antelope/deer/bear/elk/moose/wild turkey).

Eighty-two percent of active hunters hunted with a rifle, 80% hunted with a shotgun (modern), 32% hunted with a bow and arrow (compound or traditional), 20% hunted with a muzzleloader or black powder firearm and 20% hunted with a pistol or handgun.

Q53. During the past 2 years, did you hunt...

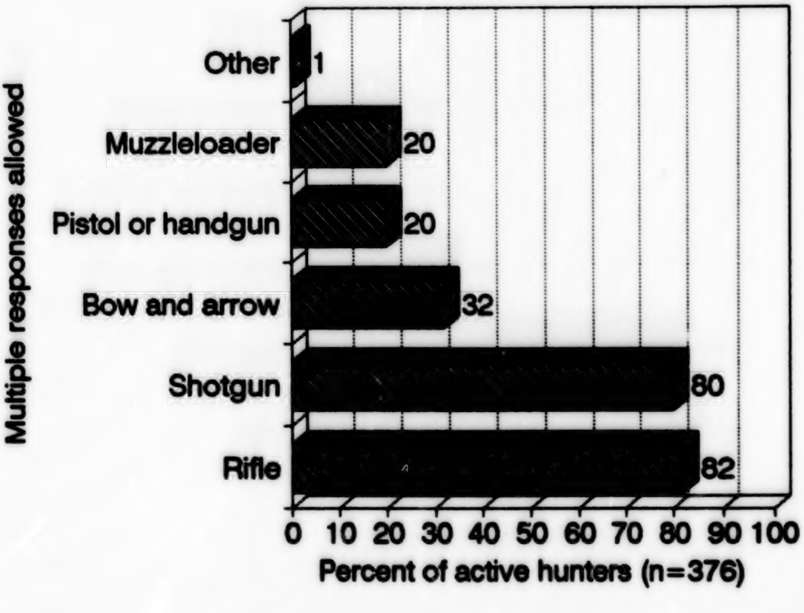


Social Aspects of Hunting

Most active hunters are usually accompanied by one or two other people when they hunt. Thirty-two percent of active hunters responded that they are usually accompanied by two other people when they hunt, and 27% of active hunters are usually accompanied by one other person when you hunt. Eight percent of hunters usually hunt alone, 14% are usually accompanied by three people, 8% are usually accompanied by four other people, and 12% of active hunters are usually accompanied by over five other people.

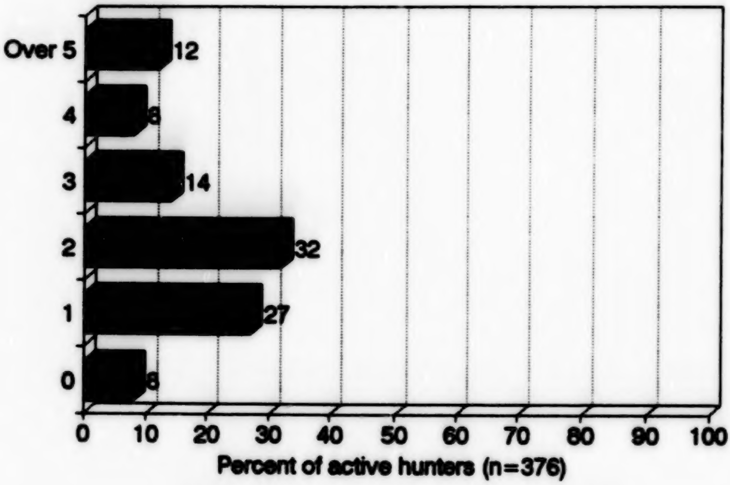
Sixty-five percent of hunters are usually accompanied by friends, 50% are usually accompanied by someone in their immediate family (father, daughter, brother-in-law, etc.), 13% by someone

Q54. Which of these did you hunt with in the past 2 years?

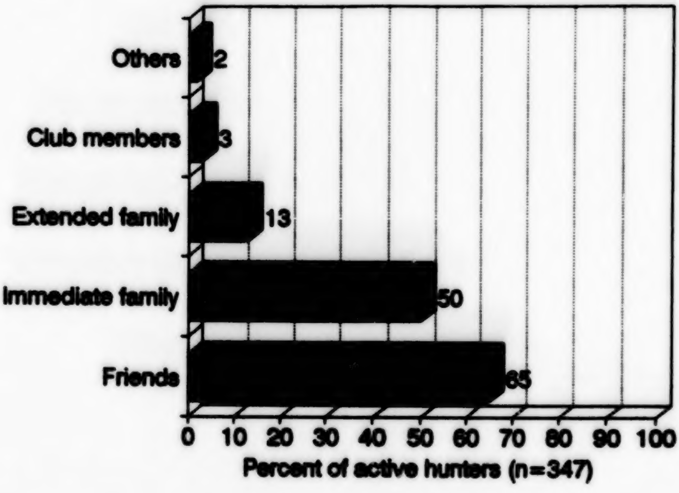


in their extended family (uncle, cousin, etc.) and 3% with club members. Respondents could state more than one type of person who usually accompanies them when they hunt.

Q55. How many people usually accompany you when you hunt?



Q56. Who usually accompanies you when you hunt?



Propensity to Hunt

Hunters were asked how likely or unlikely they were to hunt in the next two years. Of the active hunters, 77% were very likely, 17% stated somewhat likely, 2% stated unlikely, and 2% were very unlikely. Of the inactive hunters, 6% were very likely, 15% stated somewhat likely, 20% stated unlikely and 58% stated very unlikely.

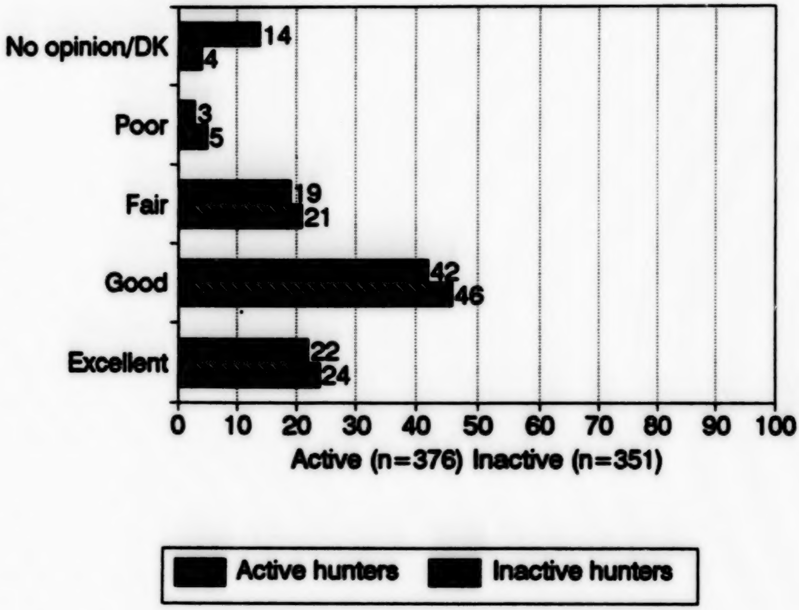
Opinion of State Fish and Wildlife Agency in Providing Hunting Opportunities

Active and inactive hunters were favorable to their state fish and wildlife agency in terms of the agency providing hunting opportunities. Among active hunters, 24% gave their agency an excellent rating, 46% stated good, 21% said fair and 5% said poor; 4% did not know or had no opinion. Among inactive hunters, 22% gave their agency an excellent rating, 42% stated good, 19% said fair and 3% said poor; 14% did not know or had no opinion.

Hunting Dissatisfaction Among Inactive Hunters

Those hunters who reported hunting since age 16 but not hunting in the past 2 years are considered to be inactive hunters.

Many things might have influenced the decision of a hunter not to hunt as much or at all in the past 2 years. A list of several items were read to inactive hunters and asked if the item did not influence their decision not to hunt, moderately influenced their



Q59. Opinion of state's fish and wildl. effort to provide hunting opportunities

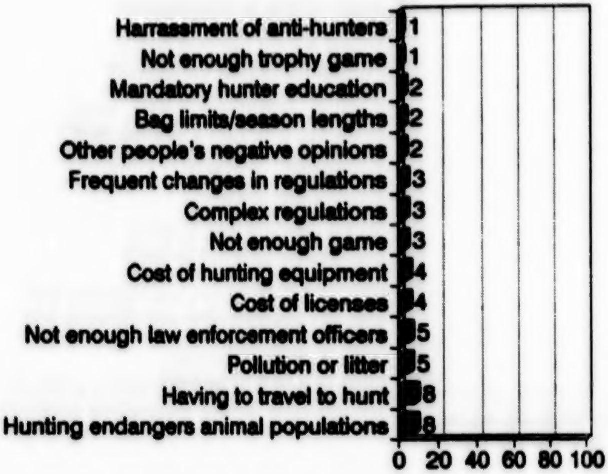
decision not to hunt or strongly influenced their decision not to hunt.

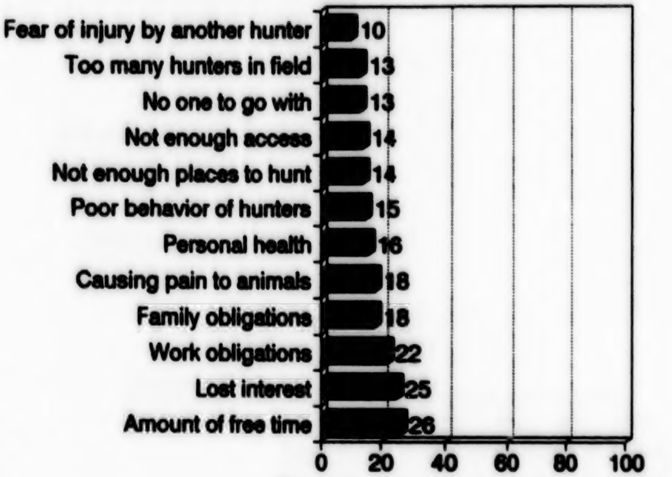
Seventy-nine percent stated that their personal health did not influence their decision not to hunt; 5% stated this had moderately influenced their decision not to hunt and 16% stated this had strongly influenced their decision not to hunt. Seventy-two percent stated that too many hunters in the field did not influence their decision not to hunt; 15% stated this had moderately influenced their decision not to hunt and 13% stated this had strongly influenced their decision not to hunt. Ninety-four percent stated that restrictive bag limits or season lengths did not influence their decision not to hunt; 3% stated this had moderately influenced their decision not to hunt and 2% stated this had strongly influenced their decision not to hunt. Seventy percent stated that not having anyone to go with did not influence their decision not to hunt; 17% stated this had moderately influenced their decision not to hunt and 13% stated this had strongly influenced their decision not to hunt. Eighty percent stated that having to travel in order to hunt did not influence their decision not to hunt; 11% stated this had moderately influenced their decision not to hunt and 8% stated this had strongly influenced their decision not to hunt. Seventy-three percent stated that not having enough places to hunt did not influence their decision not to hunt; 12% stated this had moderately influenced their decision not to hunt and 14% stated this had strongly influenced their decision not to hunt. Seventy percent stated that not having enough access to places to hunt did not influence their decision not to hunt; 15% stated this had moderately influenced their decision not to hunt and 14% stated this had strongly influenced their decision not to hunt. Ninety-four percent stated that other people's negative opinions toward them as a hunter did not influence their decision not to hunt; 2% stated this had moderately influenced their decision not to hunt and 2% stated this had strongly influenced their decision not to hunt. Ninety-seven percent stated that harassment from anti-hunters in the field did not influence their decision not to hunt; 1% stated this had moderately influenced their decision not to hunt and .6% stated this had strongly influenced their decision not to hunt. Ninety-four percent stated that not having enough trophy animals to hunt did not influence their decision not to hunt; 3% stated this had moderately influenced their decision not to hunt and 1% stated this had strongly influenced their decision not to hunt. Eighty-seven percent stated that not having enough game animals to hunt in general did not influence their decision not to hunt; 9% stated this had moderately influenced their decision not to hunt and 3% stated this had strongly influenced their decision not to hunt. Ninety-one percent stated that complex regulations did not influence their decision not to hunt; 5% stated this had moderately influenced their decision not to hunt and 3% stated this had strongly influenced their decision not to hunt. Ninety percent stated frequent changes in regulations did not influence their decision not to hunt; 6% stated this had moderately influenced their decision not to hunt and 3% stated this had strongly influenced their decision not to hunt. Ninety percent stated that not enough law enforcement officers did not influence their decision not to hunt; 5% stated this had moderately influenced their decision not to hunt and 5% stated this had strongly influenced their decision not to hunt. Seventy percent stated that a fear of being injured by another hunter did not influence their decision not to hunt; 16% stated this had moderately influenced their decision not to hunt and 13% stated this had strongly influenced their decision not to hunt. Seventy-one percent stated that poor behavior of other hunters did not influence their decision not to hunt; 13% stated this had moderately influenced their decision not to hunt and 15% stated this had strongly influenced their decision not to hunt. Sixty-seven percent stated that the feeling of causing pain to animals did not influence their decision not to hunt; 15% stated this had moderately influenced their decision not to hunt and 18% stated this had strongly influenced their decision not to hunt. Eighty-nine percent stated that the cost of hunting licenses did not influence their decision not to hunt; 6% stated this had moderately influenced their decision not to hunt and 4% stated this had strongly influenced their decision not to hunt. Ninety-eight percent stated that finding a place to buy hunting licenses did not influence their decision not to hunt; 2% stated this had moderately influenced their decision not to hunt and .6% stated this had strongly influenced their decision not to hunt. Eighty-six percent stated that the cost of hunting equipment did not influence their decision not to hunt; 9% stated this had moderately influenced their decision not to hunt and 4% stated this had strongly influenced their decision not to hunt. Eighty-six percent stated that pollution or litter where they hunt did not influence their decision not to hunt; 7% stated this had moderately influenced their decision not to hunt and 5% stated this had strongly influenced their decision not to hunt. Ninety-three percent stated that having to take a mandatory hunter education class did not influence their decision not to hunt; 2% stated this had moderately influenced their decision not to hunt and 2% stated this had strongly influenced their decision not to hunt (This question did not apply to 3% of inactive hunters). Sixty-three percent stated that family obligations did not influence their decision not to hunt; 19% stated this had moderately influenced their decision not to hunt and 18% stated this had strongly influenced their decision not to hunt. Sixty-two percent stated that work obligations did not influence their decision not to hunt; 15% stated this had moderately influenced their decision not to hunt and 22% stated this had strongly influenced their decision not to hunt. Eighty percent stated that a perception that hunting is endangering animal populations did not influence their decision not to hunt; 11% stated this had moderately influenced their decision not to hunt and 8% stated this had strongly influenced their decision not to hunt. Fifty-eight percent stated that the amount of free time they had did not influence their decision not to hunt; 16% stated this had moderately influenced their decision not to hunt and 26% stated this had strongly influenced their decision not to hunt. Finally, 44% stated that a loss of interest in hunting did not influence their decision not to hunt; 30% stated this had moderately influenced their decision not to hunt and 25% stated this had strongly influenced their decision not to hunt.

Overall, the following most influenced inactive hunters not to hunt or caused hunting activity to decline: the amount of free time the individual had, a loss of interest in hunting, work obligations, family obligations, and the feeling of causing pain to animals.

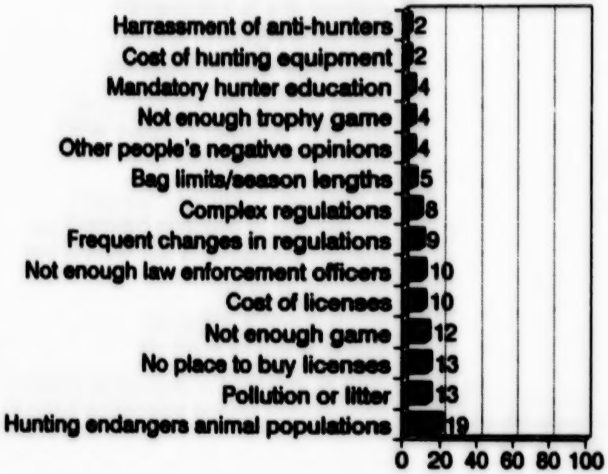
The following were the least important reasons influencing inactive hunters not to hunt or causing hunting activity to decline: lost interest, the amount of free time the individual had, work obligations, family obligations, the feeling of causing pain to animals, no one to go with and fear of injury by another hunter.

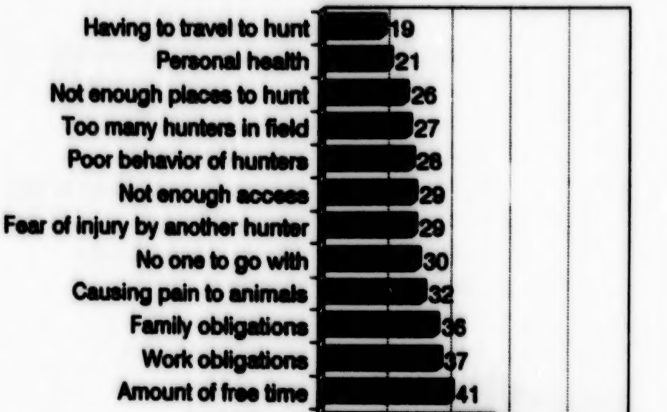
Q66-92. The following issues strongly influenced my decision not to hunt.



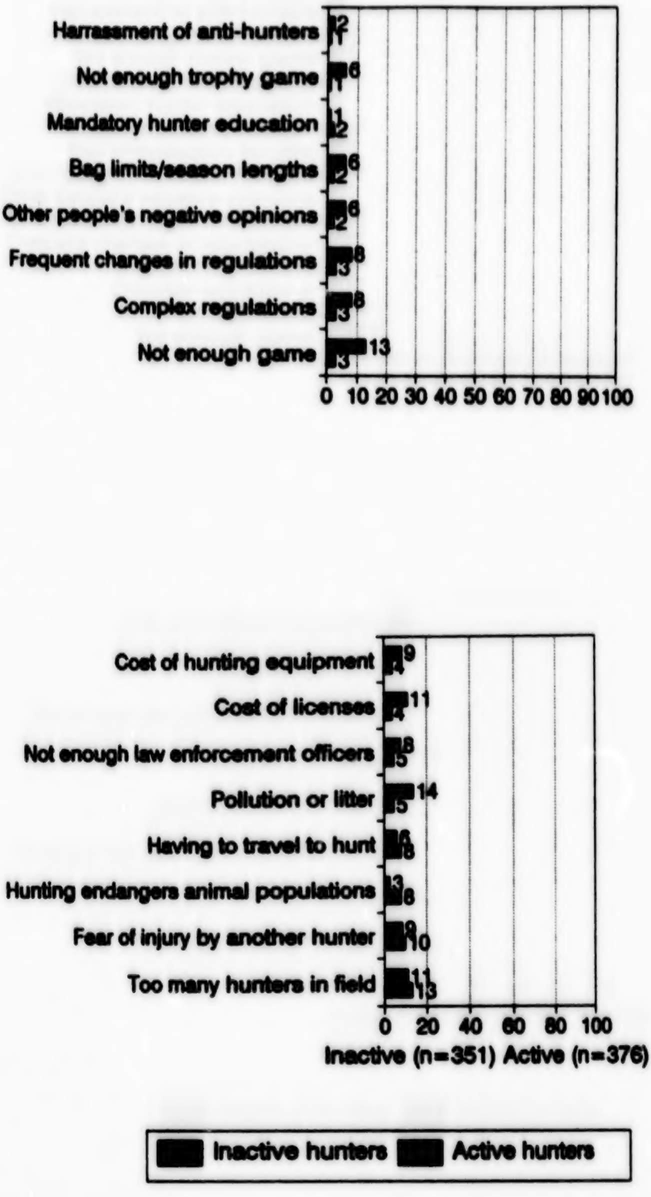


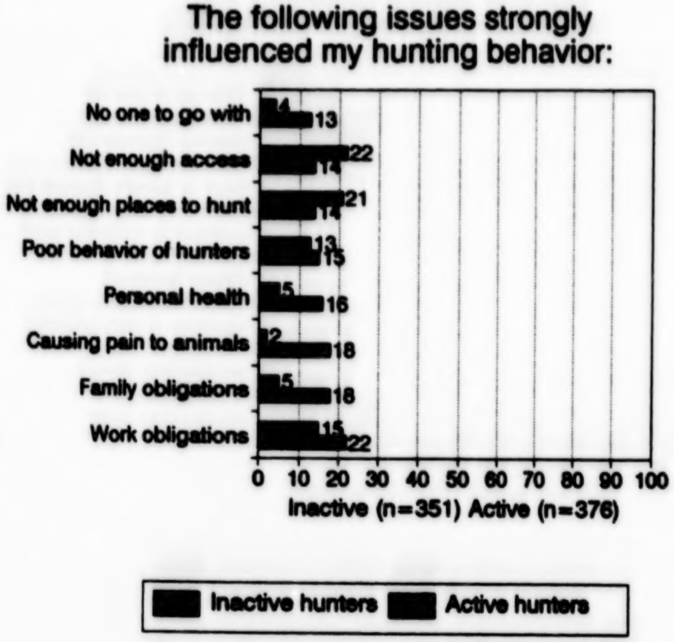
Q66-92. The following issues influenced my decision not to hunt.

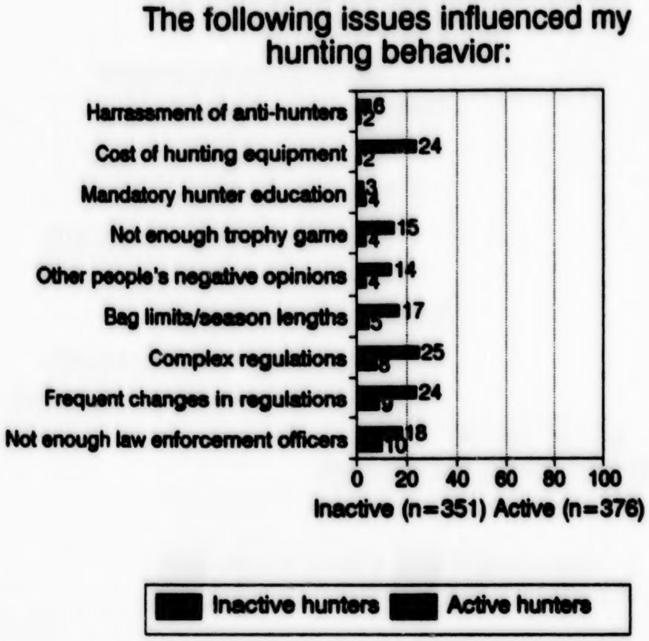




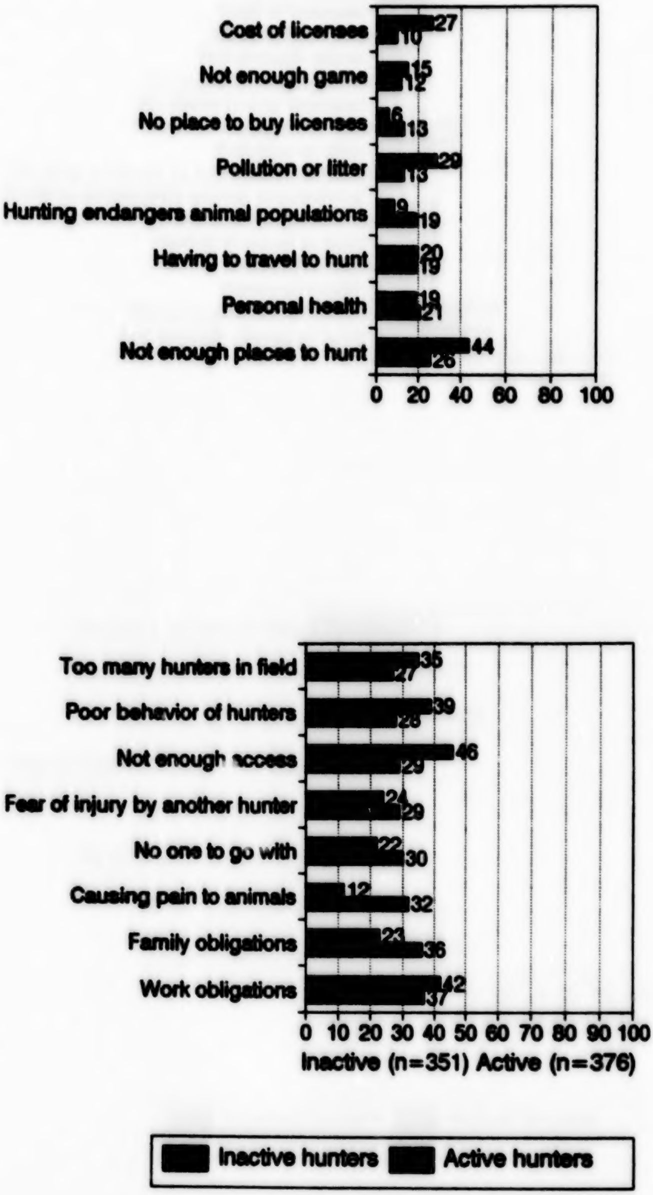
The following issues strongly influenced my hunting behavior:




The following issues strongly influenced my hunting behavior:
No one to go with
4
13
Not enough access
22
14
Not enough places to hunt
21
14
Poor behavior of hunters
13
15
Personal health
5
16
Causing pain to animals
2
18
Family obligations
5
18
Work obligations
15
22
0
10
20
30
40
50
60
70
80
90
100
Inactive (n=351) Active (n=376)
Inactive hunters
Active hunters


The following issues influenced my hunting behavior:
Harrassment of anti-hunters
6
2
Cost of hunting equipment
24
2
Mandatory hunter education
3
4
Not enough trophy game
15
4
Other people's negative opinions
14
4
Bag limits/season lengths
17
5
Complex regulations
25
8
Frequent changes in regulations
24
9
Not enough law enforcement officers
18
10
0
20
40
60
80
100
Inactive (n=351) Active (n=376)
Inactive hunters
Active hunters

The following issues influenced my hunting behavior:

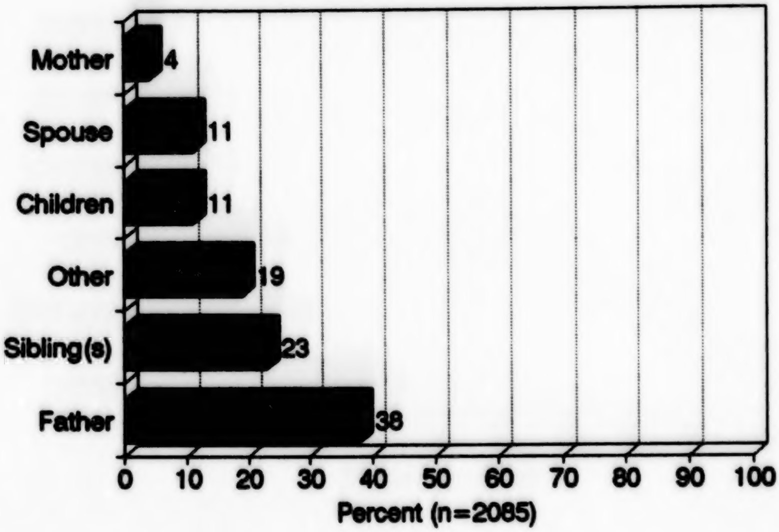


Family Hunting Participation

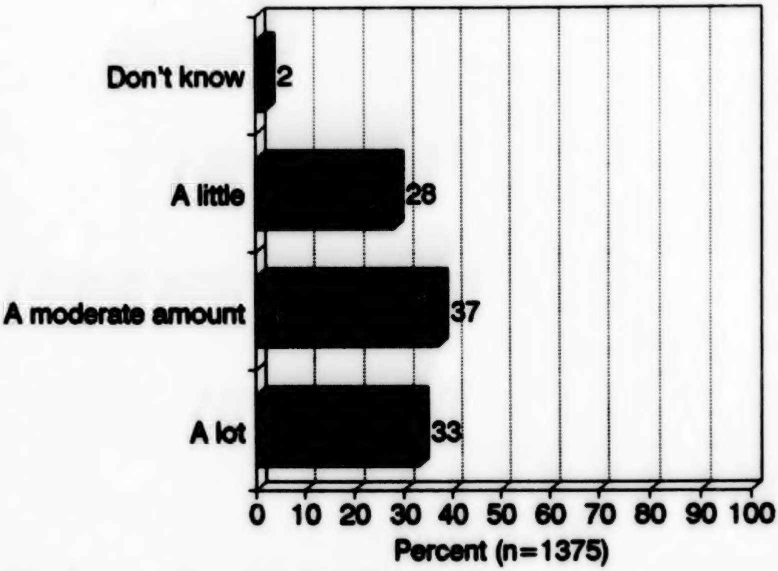
The general population respondents were asked if their parents hunted or anyone else in their family currently hunt or had hunted in the past. Thirty-eight percent said their father, 19% said someone in their household other than a family member, 23% stated their sibling(s), 11% said their spouse, 11% said their children and 4% said their mother (multiple answers were allowed).

The individuals that indicated that someone in their household currently hunted or had hunted in the past were asked if these individuals hunted a lot, a moderate amount or a little. Thirty-three percent said a lot, 37% said a moderate amount and 28% stated a little; 2% did not know.

Q98. Do your parents or anyone else in in your family hunt now or in the past?



Q99. How much did your family members hunt?



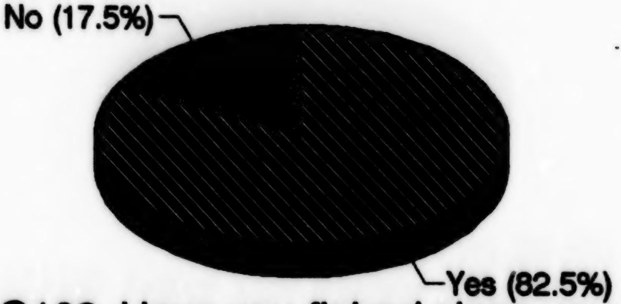
Fishing Participation

Eighty-three percent of respondents indicated they had fished when they were a child (15 years of age and younger). Of the individuals that indicated they had not fished as a child, 36% indicated they had accompanied someone who was fishing.

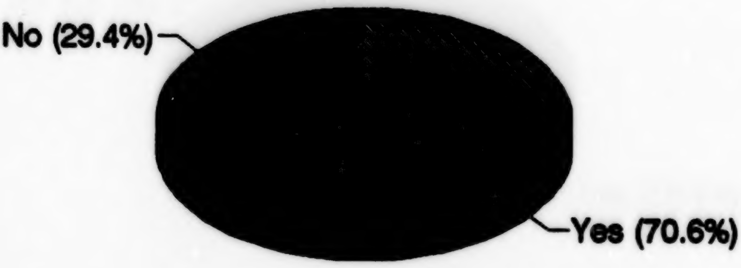
Seventy-one percent of respondents fished since they were 16 years old. Of these individuals who had fished since they were 16 years old, 96% had fished more than once.

Forty-five percent of general population respondents fished in the past two years. For this report these individuals will be referred to as active anglers.

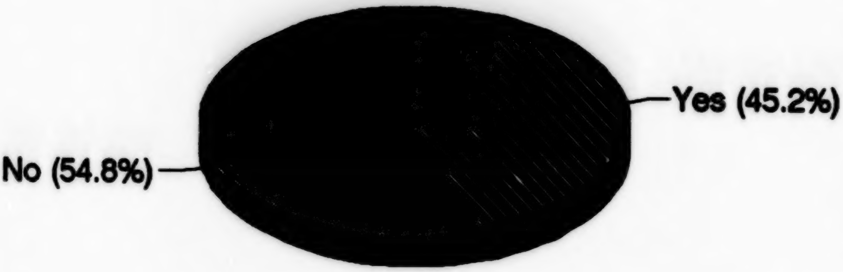
Q100. When you were a child, did you ever fish? (n=2085)



Q102. Have you fished since you were 16 years old? (n=2085)



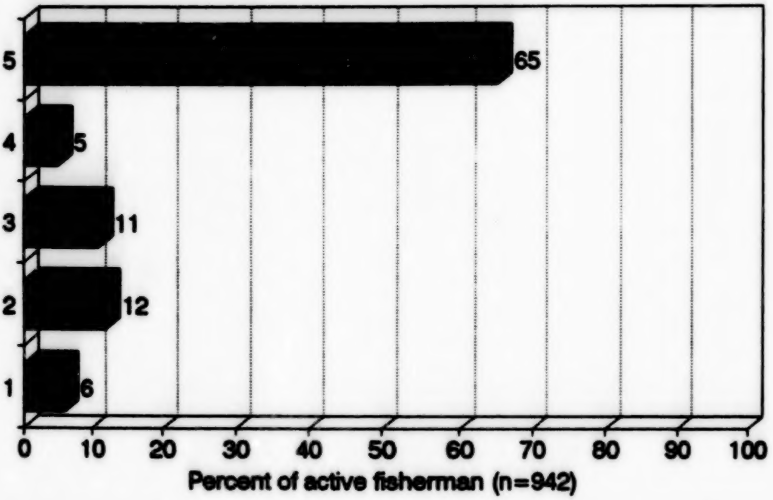
Q104. Have you fished in the past 2 years? (n=2085)



Active Anglers

Of these active anglers, 6% fished only one year during the past five years, 12% fished two of the past five years, 11% fished three of the past five years, 5% fished four of the past five years and 65% indicated they had fished every year during the past five years. Active anglers were then asked within the last five years if their number of trips or the level of their fishing activity had increased, stayed about the same, or decreased. Twenty percent indicated their level of fishing activity increased, 45% stated it had stayed about the same while 35% stated their level of fishing activity had decreased.

Q105. Did you fish during 1, 2, 3, 4
or every year during the past 5 years?

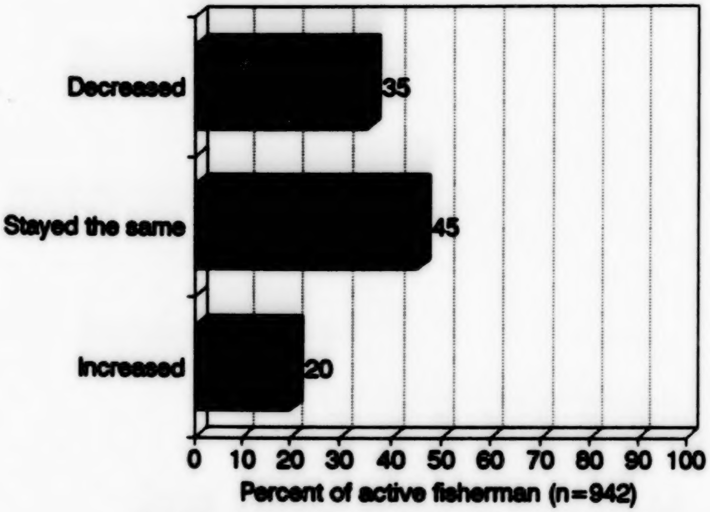


Active anglers were asked the number of days they had fished during the past 12 months (1994). Thirty-seven percent fished one to 5 days, 15% fished six to ten days, 14% fished eleven to twenty days, 9% fished twenty-one to thirty days and 16% fished thirty-five or more days.

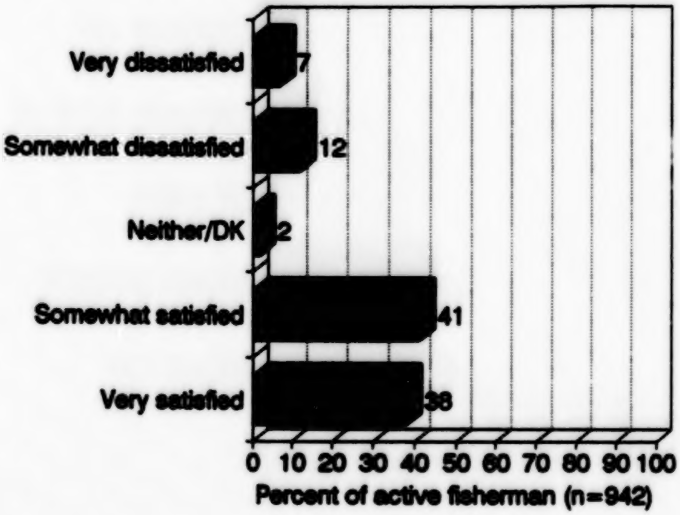
Fishing Satisfaction Among Active Anglers

Active anglers were asked "Overall, how satisfied were you with your fishing experiences over the past 2 years?" Thirty-eight percent were very satisfied, 41% were somewhat satisfied, 2% were neither nor dissatisfied or did not know, 12% were somewhat dissatisfied and 7% were very dissatisfied.

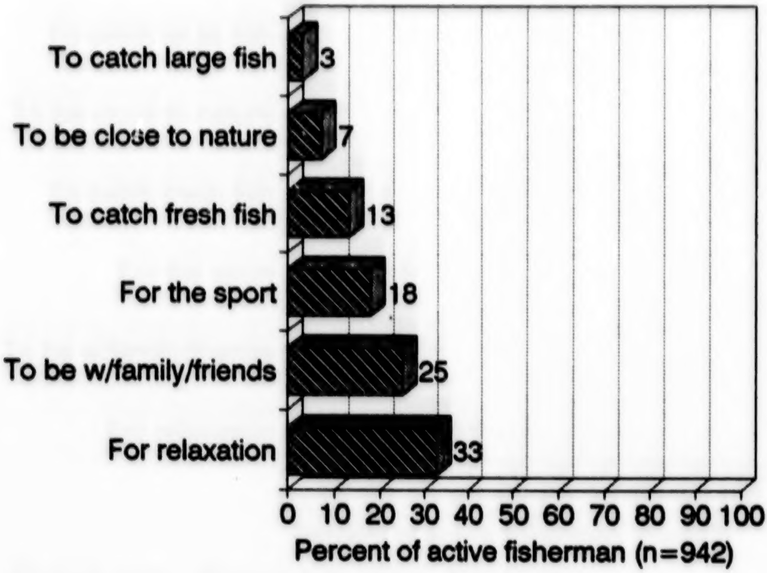
Q106. In the last 5 years has the level of your fishing activity...



Q108. Opinion of fishing experiences over the past 2 years.



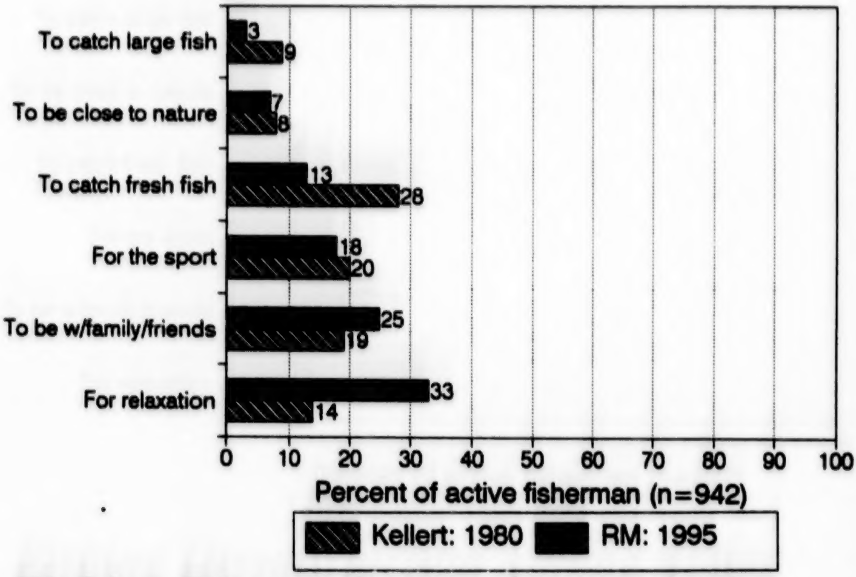
Q109. What was your main reason for fishing in the past 2 years?



Primary Reason for Fishing

Active anglers were read four reasons for fishing and were asked to select which was their most important reason for fishing in the past 2 years. Thirteen percent fished primarily to catch fresh fish, 25% fished to be with family and friends, 18% fished for the sport, 3% fished to catch large fish, 7% fished to be close to nature, and 33% fished primarily for relaxation. This exact question was asked by Dr. Steven Kellert in 1980. In Kellert's survey, 28% fished primarily to catch fresh fish, 19% fished to be with family and friends, 20% fished for the sport, 9% fished to catch large fish, 8% fished to be close to nature, and 14% fished primarily for relaxation.

Q109. What was your main reason for fishing in the past 2 years?



Fishing Dissatisfaction Among Active Anglers

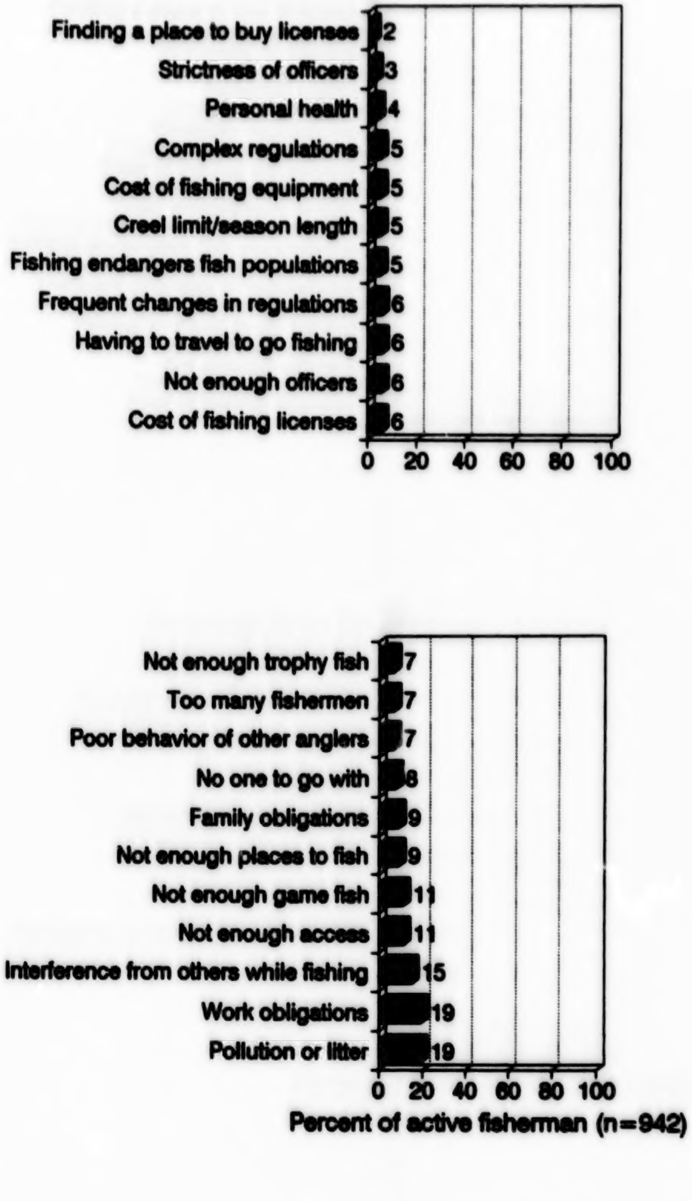
The next series of questions presented potential dissatisfactions with fishing, and active anglers were asked if the factor took away from their enjoyment of fishing over the past 2 years. Those responding that a factor took away from their enjoyment of fishing were asked if the factor strongly or moderately took away from their enjoyment.

Ninety percent stated that their personal health had not taken away from their enjoyment of fishing; 6% stated this had taken away moderately and 4% stated this had taken away strongly from their enjoyment of fishing. Seventy-eight percent stated that too many fisherman where they fish had not taken away from their enjoyment of fishing; 14% stated this had taken away moderately and 7% stated this had taken away strongly from their enjoyment of fishing. Eighty-eight percent stated that restrictive creel limits or season lengths had not taken away from their enjoyment of fishing; 7% stated this had taken away moderately and 5% stated this had taken away strongly from their enjoyment of fishing. Seventy-nine percent stated that not having anyone to go with had not taken away from their enjoyment of fishing; 14% said this had taken away moderately and 8% said this had taken away strongly from their enjoyment of fishing; Seventy-nine percent said that having to travel in order to fish had not taken away from their enjoyment of fishing; 15% stated this had taken away moderately and 6% stated this had taken away strongly from their enjoyment of fishing. Seventy-seven percent said that not having enough places to fish had not taken away from their enjoyment of fishing; 14% stated this had taken away moderately and 9% stated this had taken away strongly from their enjoyment of fishing. Seventy-six percent said that not having enough access to places to fish had not taken away from their enjoyment of fishing; 13% stated this had taken away moderately and 11% stated this had taken away strongly from their enjoyment of fishing. Eighty-five percent said that not having enough trophy fish to catch had not taken away from their enjoyment of fishing; 8% stated this had taken away moderately and 7% stated this had taken away strongly from their enjoyment of fishing. Seventy-five percent said that not having enough game fish to catch in general had not taken away from their enjoyment of fishing; 14% stated this had taken away moderately and 11% stated this had taken away strongly from their enjoyment of fishing. Eighty-six percent said that complex regulations had not taken away from their enjoyment of fishing; 8% stated this had taken away moderately and 5% stated this had taken away strongly from their enjoyment of fishing. Eighty-six percent said that frequent changes in regulations had not taken away from their enjoyment of fishing; 8% stated this had taken away moderately and 6% stated this had taken away strongly from their enjoyment of fishing. Ninety-four percent said that the strictness of law enforcement officers had not taken away from their enjoyment of fishing; 3% stated this had taken away moderately and 3% stated this had taken away strongly from their enjoyment of fishing. Eighty-five percent said that not enough law enforcement officers where they fish had not taken away from their enjoyment of fishing; 7% stated this had taken away moderately and 6% stated this had taken away strongly from their enjoyment of fishing. Sixty-seven percent said that interference from people doing other things while they are fishing did not take away from their enjoyment of fishing; 19% stated this had taken away moderately and 15% stated this had taken away strongly from their enjoyment of fishing. Seventy-nine percent said that poor behavior of other fisherman had not taken away from their enjoyment of fishing; 13% stated this had taken away moderately and 7% stated this had taken away strongly from their enjoyment of fishing. Eighty-four percent said that the cost of fishing licenses had not taken away from their enjoyment of fishing; 10% stated this had taken away moderately and 6% stated this had taken away strongly from their enjoyment of fishing. Ninety-four percent said that finding a place to buy fishing licenses had not taken away from their enjoyment of fishing; 4% stated this had taken away moderately and 2% stated this had taken away strongly from their enjoyment of fishing. Eighty-six percent said that the cost of fishing equipment had not taken away from their enjoyment of fishing; 9% stated this had taken away moderately and 5% stated this had taken away strongly from their enjoyment of fishing. Sixty-four percent said that pollution or litter where they fish had not taken away from their enjoyment of fishing; 17% stated this had taken away moderately and 19% stated this had taken away strongly from their enjoyment of fishing. Seventy-two percent said that family obligations had not taken away from their enjoyment of fishing; 18% stated this had taken away moderately and 9% stated this had taken away strongly from their enjoyment of fishing. Fifty-eight percent said that work obligations had not taken away from their enjoyment of fishing; 23% stated this had taken away moderately and 19% stated this had taken away strongly from their enjoyment of fishing. Eighty-nine percent said that a perception that fishing is endangering fish populations had not taken away from their enjoyment of fishing; 5% stated this had taken away moderately and 5% stated this had taken away strongly from their enjoyment of fishing.

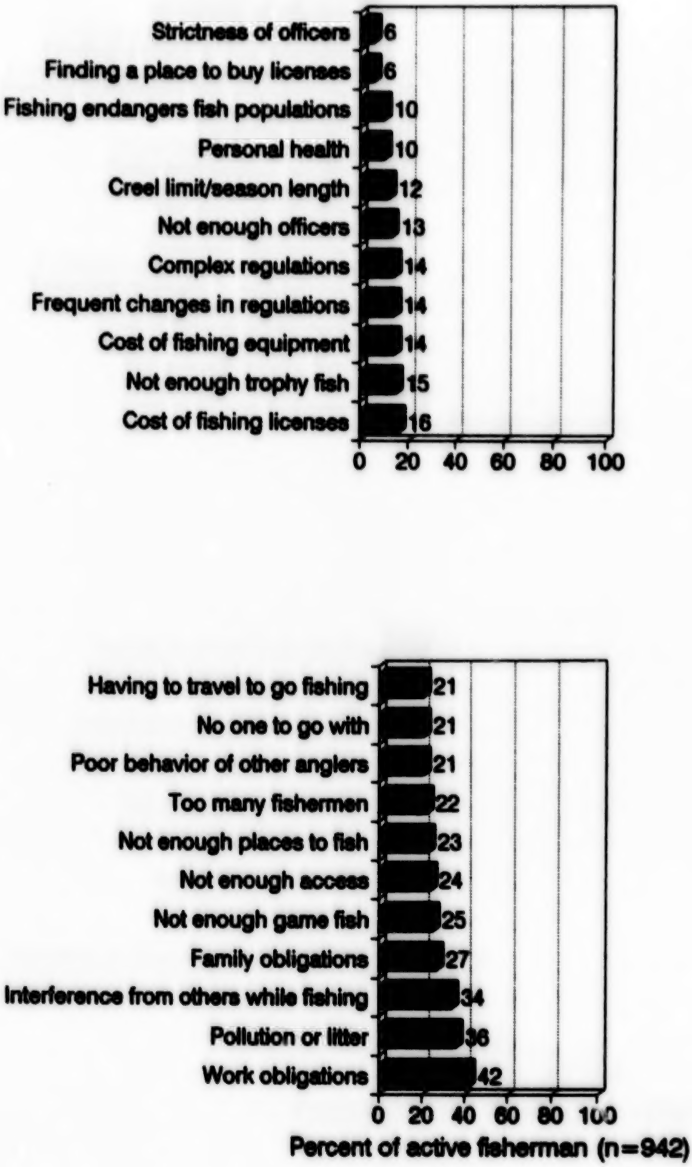
Overall, the following took away most from fishing satisfaction for active anglers: Pollution or litter (took away strongly from fishing satisfaction for 19% of the active anglers), work obligations (took away strongly from fishing satisfaction from 19% of the active anglers), interference from people doing other recreational activities where they are fishing (took away strongly from fishing satisfaction from 15% of the active anglers), not enough access (took away strongly from fishing satisfaction from 11% of the active anglers) and not enough game fish (took away strongly from fishing satisfaction from 11% of the active anglers). It is very important to note that the highest percentage of a reason for dissatisfaction that had "taken away strongly" was only 19%.

The following were the least important reasons taking away from fishing satisfaction among active anglers: finding a place to buy a license (took away strongly from fishing satisfaction for 2% of the active anglers), the strictness of law enforcement officers (took away strongly from fishing satisfaction for 3% of the active anglers), and personal health (took away strongly from fishing satisfaction for 4% of the active anglers).

Q110-131. The following have strongly taken away from fishing enjoyment.



Q110-131. The following have taken away from fishing enjoyment.



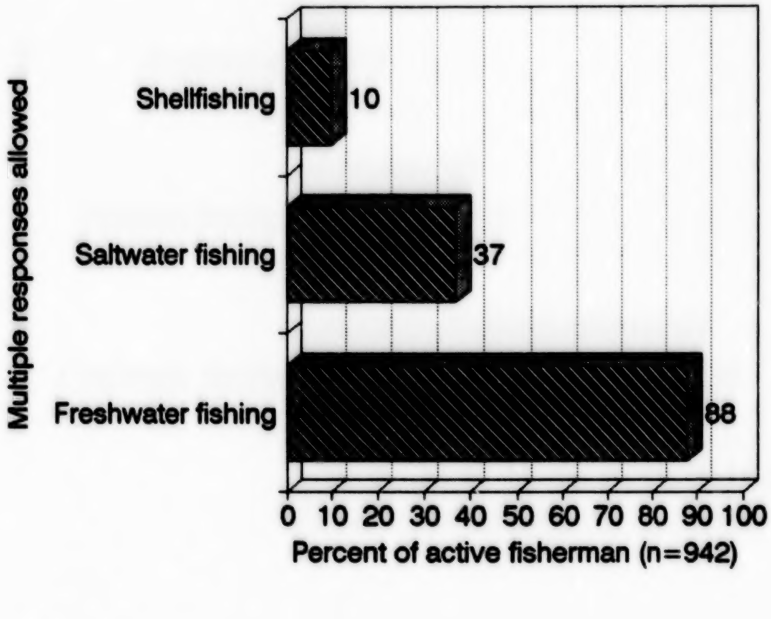
Types of Fishing

Active anglers were asked if they had participated in freshwater, saltwater or shellfishing during the past two years. Eighty-eight percent of active anglers fished in freshwater, 37% fished in saltwater, and 10% participated in shellfishing.

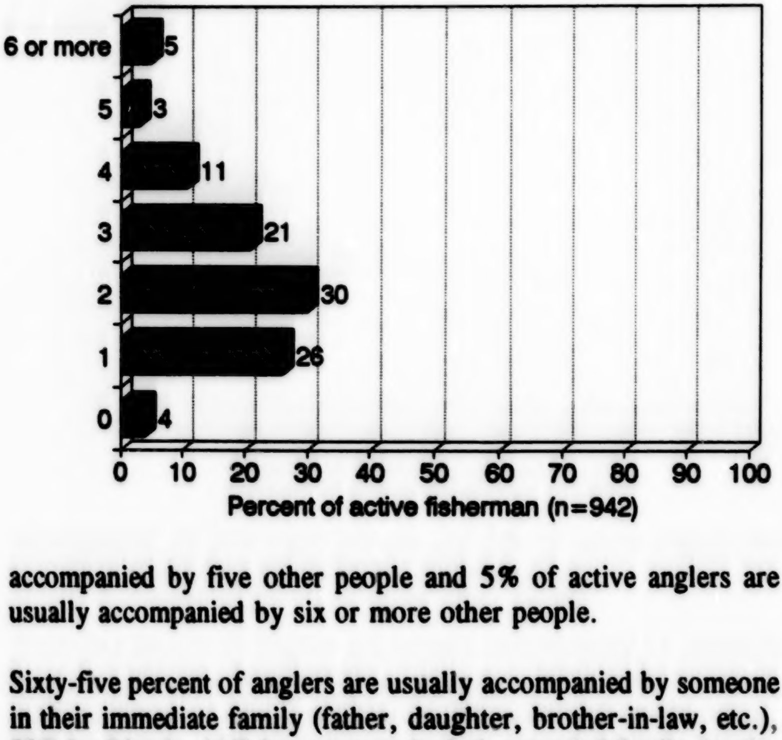
Social Aspects of Fishing

Most active anglers are usually accompanied by one, two or three other people. Thirty percent of active anglers are usually accompanied by two other people, 26% by one other person and 21% by three other people. Four percent of anglers fish alone, 11% are usually accompanied by four other people, 3% are usually

Q133. During the past 2 years did you take part in the following activities?



Q134. How many other people usually accompany you when you go fishing?



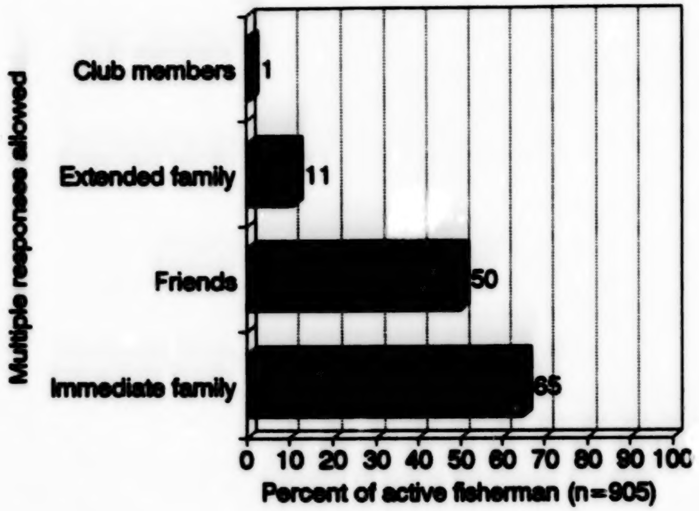
accompanied by five other people and 5% of active anglers are usually accompanied by six or more other people.

Sixty-five percent of anglers are usually accompanied by someone in their immediate family (father, daughter, brother-in-law, etc.), 50% by friends, 11% by someone in their extended family (uncle, cousin, etc.) and 1% with club members. Respondents could state more than one type of person who usually accompanies them when they fish.

Propensity to Fish

Anglers were asked how likely or unlikely they were to go fishing in the next two years. Among active anglers, 71% said very likely, 21% stated likely, 3% stated unlikely and 3% stated very unlikely. Among inactive anglers, 8% said very likely, 29% stated

Q135. Who usually accompanies you when when you go fishing?

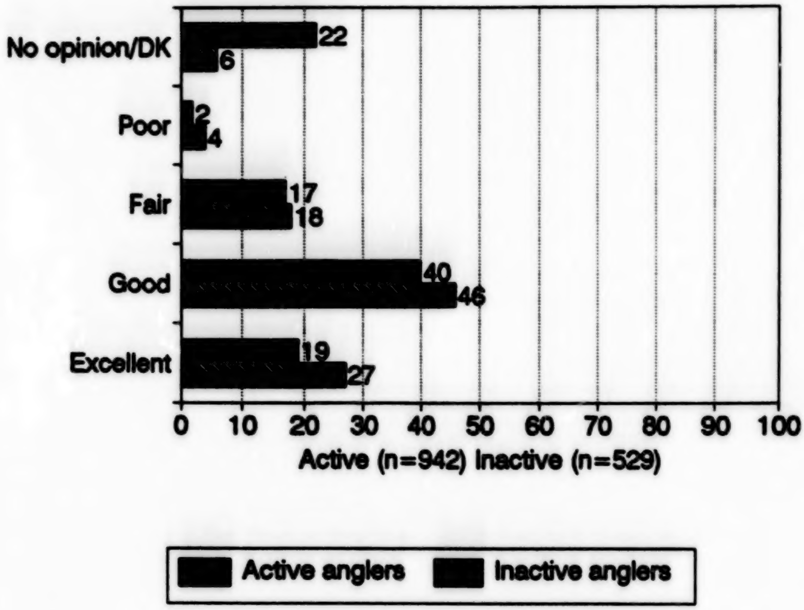


likely, 21% stated unlikely and 40% stated very unlikely.

Opinion of State Fish and Wildlife Agency in Providing Fishing Opportunities

Active anglers were very satisfied with their state fish and wildlife agency in providing fishing opportunities. Twenty-seven percent rated the agency as excellent, 46% stated good, 18% stated fair, 4% said they did not know while 6% did not know or had no opinion.

Q138. Opinion of state F/W agency's effort to provide fishing opportunities



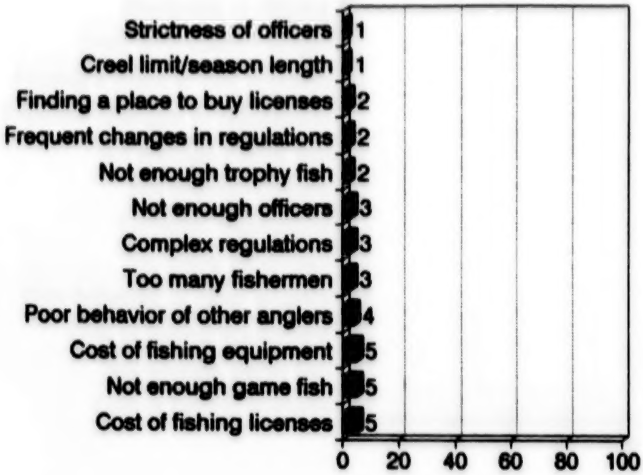
Inactive Anglers

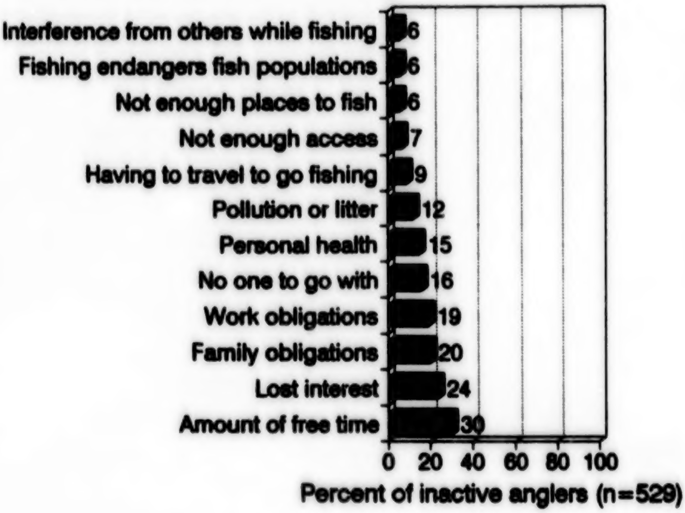
Many things might have influenced the decision of an angler not to fish as much or at all in the past 2 years. A list of several items were read to inactive anglers and asked if the item did not influence their decision not to fish, moderately influenced their decision not to fish or strongly influenced their decision not to fish.

Eighty-three percent stated that their personal health did not influence their decision not to fish; 5% stated this had moderately influenced their decision not to fish and 13% stated this had strongly influenced their decision not to fish. Ninety-two percent stated that too many fisherman where they fish did not influence their decision not to fish; 4% stated this had moderately influenced their decision not to fish and 3% stated this had strongly influenced their decision not to fish. Ninety-five percent stated that restrictive creel limits or season lengths did not influence their decision not to fish; 4% stated this had moderately influenced their decision not to fish and 1% stated this had strongly influenced their decision not to fish. Sixty-three percent stated that not having anyone to go with did not influence their decision not to fish; 20% stated this had moderately influenced their decision not to fish and 16% stated this had strongly influenced their decision not to fish. Seventy-seven percent stated that having to travel in order to fish did not influence their decision not to fish; 14% stated this had moderately influenced their decision not to fish and 9% stated this had strongly influenced their decision not to fish. Eighty-six percent stated that not having enough places to fish did not influence their decision not to fish; 7% stated this had moderately influenced their decision not to fish and 6% stated this had strongly influenced their decision not to fish. Eighty-five percent stated that not having enough access to places to fish did not influence their decision not to fish; 7% stated this had moderately influenced their decision not to fish and 7% stated this had strongly influenced their decision not to fish. Ninety-four percent stated that not having enough trophy fish to catch did not influence their decision not to fish; 3% stated this had moderately influenced their decision not to fish and 2% stated this had strongly influenced their decision not to fish. Eighty-eight percent stated that not having enough game fish to catch in general did not influence their decision not to fish; 5% stated this had moderately influenced their decision not to fish and 5% stated this had strongly influenced their decision not to fish. Ninety-three percent stated that complex regulations did not influence their decision not to fish; 3% stated this had moderately influenced their decision not to fish and 3% stated this had strongly influenced their decision not to fish. Ninety-two percent stated that frequent changes in regulations did not influence their decision not to fish; 4% stated this had moderately influenced their decision not to fish and 2% stated this had strongly influenced their decision not to fish. Ninety-six percent stated that the strictness of law enforcement officers did not influence their decision not to fish; 2% stated this had moderately influenced their decision not to fish and 1% stated this had strongly influenced their decision not to fish. Ninety percent stated that not enough law enforcement officers where they fish did not influence their decision not to fish; 3% stated this had moderately influenced their decision not to fish and 3% stated this had strongly influenced their decision not to fish. Eighty-two percent stated that interference from people doing other recreational activities while they were fishing did not influence their decision not to fish; 12% stated this had moderately influenced their decision not to fish and 6% stated this had strongly influenced their decision not to fish. Eighty-nine percent stated that poor behavior of other fisherman did not influence their decision not to fish; 6% stated this had moderately influenced their decision not to fish and 4% stated this had strongly influenced their decision not to fish. Eighty-seven percent stated that the cost of fishing licenses did not influence their decision not to fish; 9% stated this had moderately influenced their decision not to fish and 5% stated this had strongly influenced their decision not to fish. Ninety-five percent stated that finding a place to buy fishing licenses did not influence their decision not to fish; 3% stated this had moderately influenced their decision not to fish and 2% stated this had strongly influenced their decision not to fish. Eighty-six percent stated that the cost of fishing equipment did not influence their decision not to fish; 9% stated this had moderately influenced their decision not to fish and 5% stated this had strongly influenced their decision not to fish. Seventy-eight percent stated that pollution or litter where they fish did not influence their decision not to fish; 10% stated this had moderately influenced their decision not to fish and 12% stated this had strongly influenced their decision not to fish. Sixty-three percent stated that family obligations did not influence their decision not to fish; 16% stated this had moderately influenced their decision not to fish and 20% stated this had strongly influenced their decision not to fish. Sixty-five percent stated that work obligations did not influence their decision not to fish; 16% stated this had moderately influenced their decision not to fish and 19% stated this had strongly influenced their decision not to fish. Fifty-two percent stated that the amount of free time they have did not influence their decision not to fish; 18% stated this had moderately influenced their decision not to fish and 30% stated this had strongly influenced their decision not to fish. Forty-seven percent stated that a loss of interest in fishing did not influence their decision not to fish; 29% stated this had moderately influenced their decision not to fish and 24% stated this had strongly influenced their decision not to fish. Finally, 87% stated that a perception that fishing was endangering fish populations did not influence their decision not to fish; 6% stated this had moderately influenced their decision not to fish and 6% stated this had strongly influenced their decision not to fish.

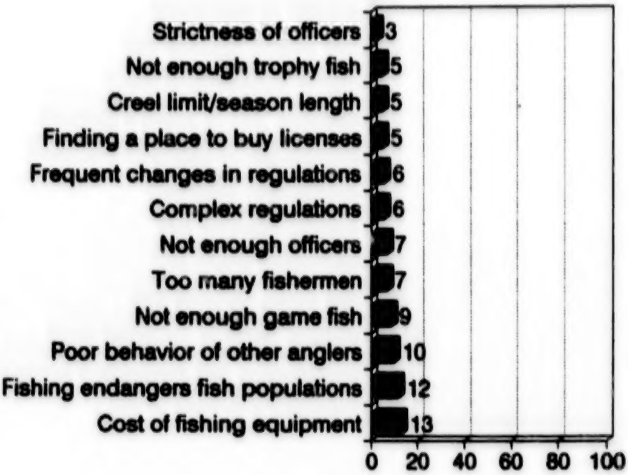
The following issues most influenced inactive anglers not to fish or most caused fishing activity to decline: lost interest (53% of inactive anglers stated that this strongly or moderately influenced their decision not to fish), amount of free time (48% of inactive anglers stated that this strongly or moderately influenced their decision not to fish), family obligations (37% of inactive anglers stated that this strongly or moderately influenced their decision not to fish), no one to go with (36% of inactive anglers stated that this strongly or moderately influenced their decision not to fish), and work obligations (35% of inactive anglers stated that this strongly or moderately influenced their decision not to fish).

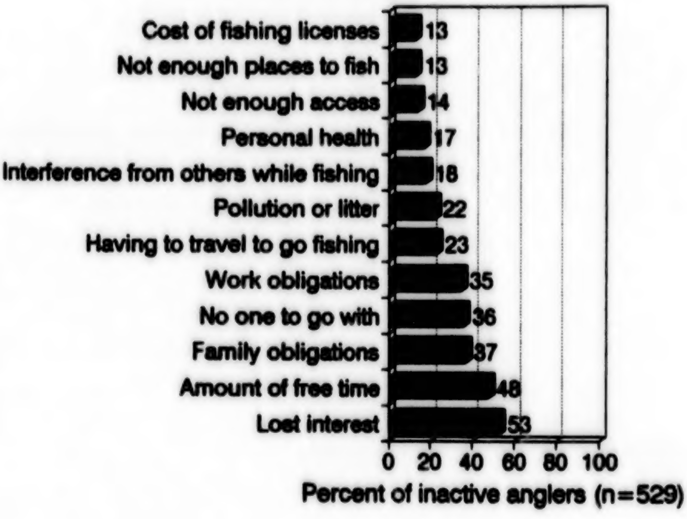
Q143-166. The following issues strongly influenced my decision not to fish:

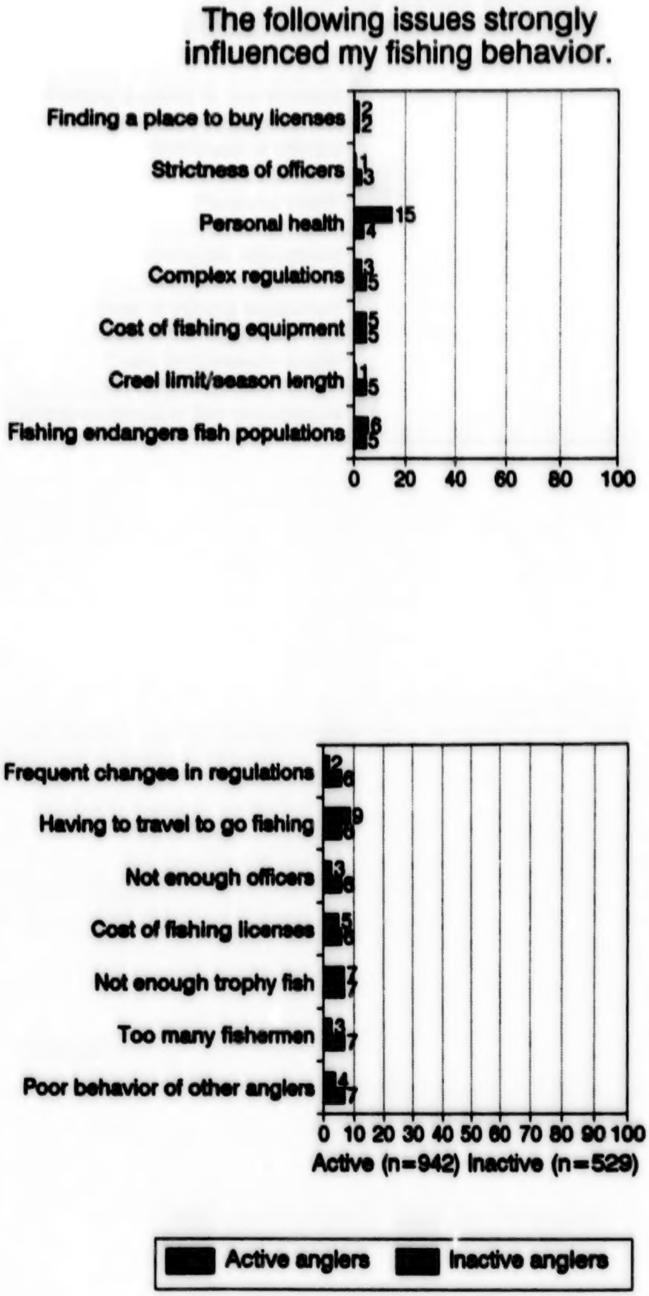


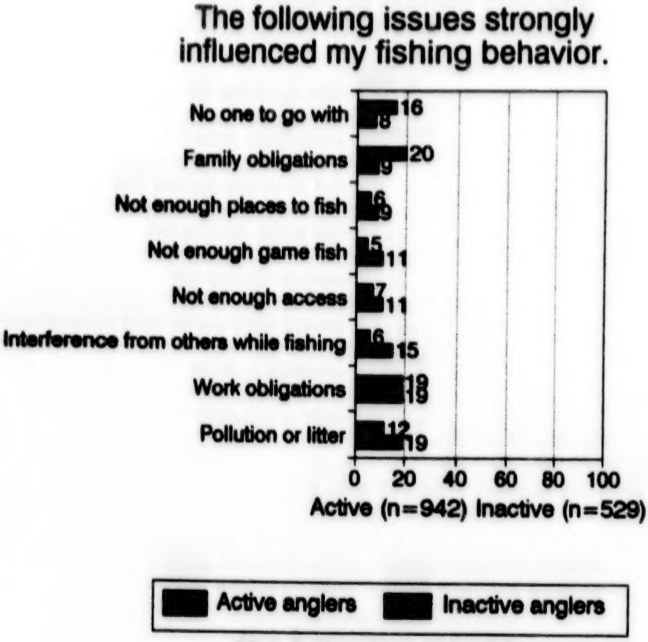


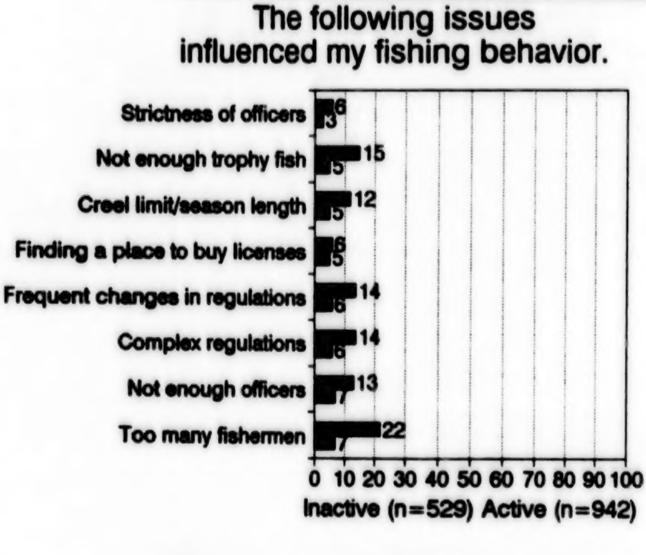
Q143-166. The following issues influenced my decision not to fish:



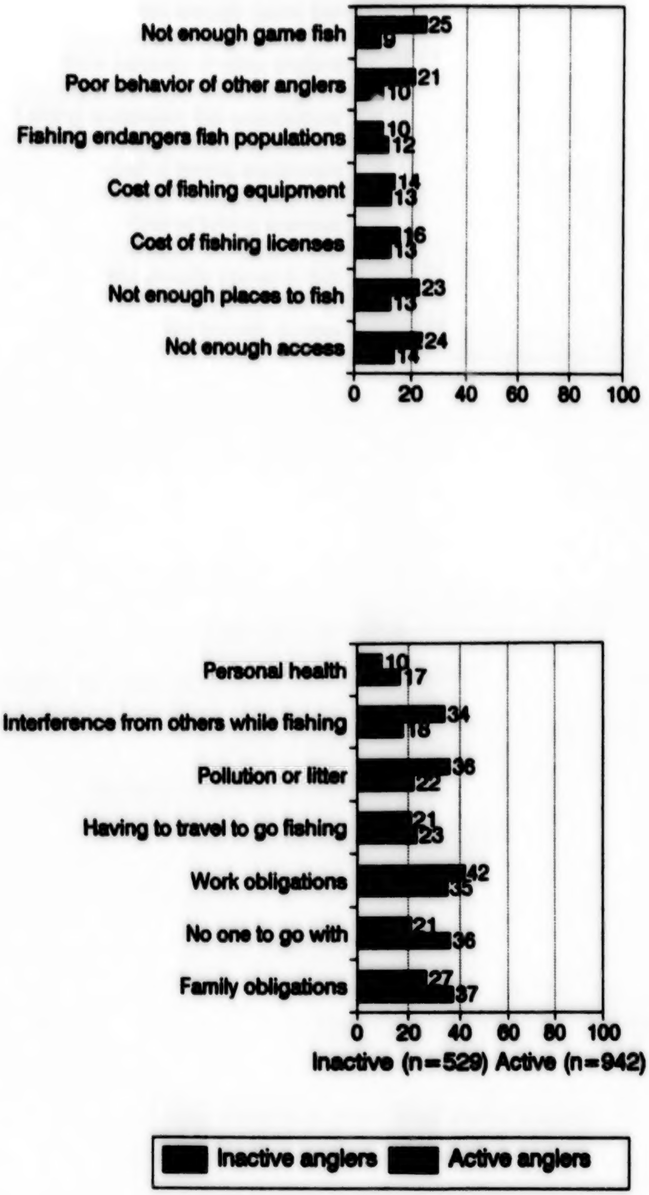



The following issues strongly influenced my fishing behavior.
Finding a place to buy licenses
2
2
Strictness of officers
1
3
Personal health
15
4
Complex regulations
3
5
Cost of fishing equipment
5
5
Creel limit/season length
1
5
Fishing endangers fish populations
6
5
0
20
40
60
80
100
Frequent changes in regulations
2
6
Having to travel to go fishing
9
6
Not enough officers
3
6
Cost of fishing licenses
5
6
Not enough trophy fish
7
7
Too many fishermen
3
7
Poor behavior of other anglers
4
7
0
10
20
30
40
50
60
70
80
90
100
Active (n=942) Inactive (n=529)
Active anglers
Inactive anglers

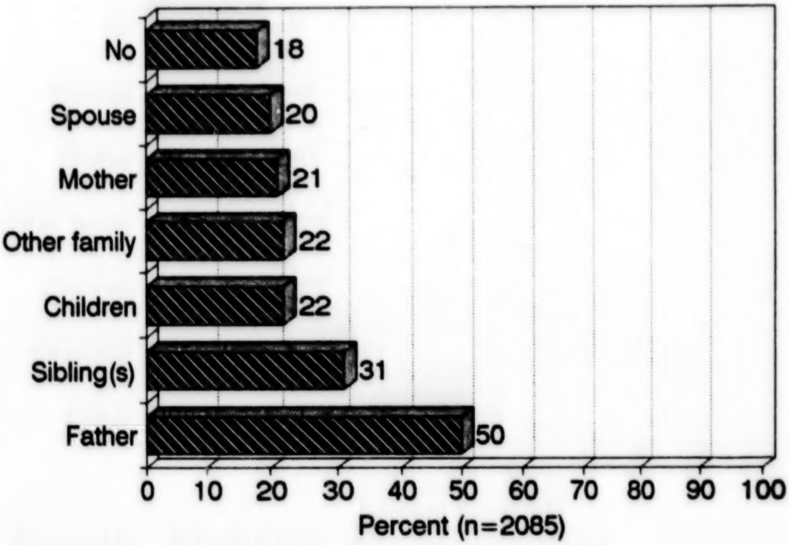

The following issues strongly influenced my fishing behavior.
No one to go with
16
8
Family obligations
20
9
Not enough places to fish
6
9
Not enough game fish
5
11
Not enough access
7
11
Interference from others while fishing
6
15
Work obligations
19
19
Pollution or litter
12
19
0
20
40
60
80
100
Active (n=942) Inactive (n=529)
Active anglers
Inactive anglers


The following issues influenced my fishing behavior.
Strictness of officers
6
3
Not enough trophy fish
15
5
Creel limit/season length
12
5
Finding a place to buy licenses
6
5
Frequent changes in regulations
14
6
Complex regulations
14
6
Not enough officers
13
7
Too many fishermen
22
7
0
10
20
30
40
50
60
70
80
90
100
Inactive (n=529) Active (n=942)
Inactive anglers
Active anglers

The following issues influenced my fishing behavior.



Q172. Do your parents or anyone else in your family fish now or in the past?

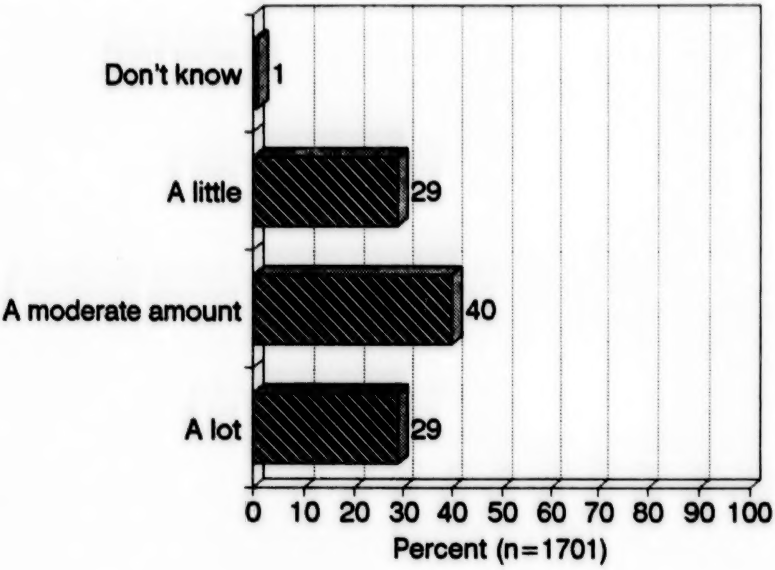


Family Fishing Participation

General population respondents were asked if their parents fished or anyone else in their family currently fish or had fished in the past. Fifty percent said their father fished now or in the past, 22% said someone in their household other than a family member, 31% stated their sibling(s), 20% said their spouse, 22% said their children and 21% said their mother. Multiple answers were allowed.

The individuals that indicated that someone in their household currently fished or had fished in the past were asked if these individuals fished a lot, a moderate amount or a little. Twenty-nine percent said a lot, 40% said a moderate amount and 29% stated a little.

Q173. How often did these family members fish?



Chapter III • Multivariate Analysis Results

Hunting

Hunting General Rates

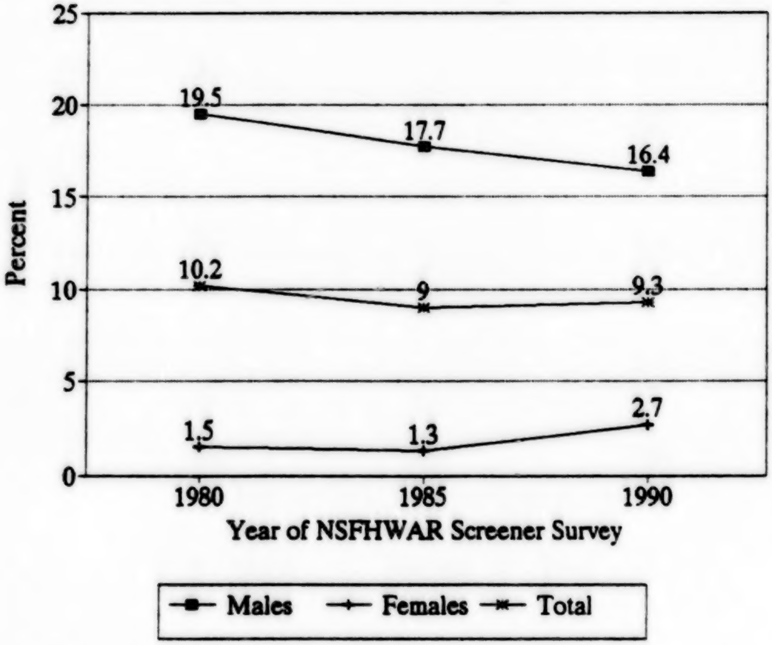
1. The overall percentages, which show a leveling off from 9% in 1985 to 9.3% in 1990, mask a very important interaction by gender.
2. The percentage of males reporting "hunting last year" continues to decline over the 1980-1990 decade from 19.5% to 16.4%. This is a 16% decline off the 19.5% base.
3. The percentage of females hunting from 1985 to 1990 increased from 1.3% to 2.7%. The female rate more than doubled, off the base of 1.3%.

Factors Associated with the Changes in Hunting

1. The general model predicts a decrease of 3.9% per decade for males off a base of 19.5%. The observed decline 1980-1990 was 3.1%.
2. Hunting rates for males would be reduced by 2.1% per decade if the rest of the variables in the model (age, education, etc.) were held constant.
3. For males, the largest effect on hunting is associated with growing up in rural areas. This is positively associated with hunting, but fewer people are growing up in rural areas. When small towns are excluded, the decline was from 25% to

20% from 1980 to 1990.

4. Age is the second biggest influence on decline in male hunting. As the population ages, there are fewer male hunters within that population.
5. Minority race-ethnicity has a negative effect. White men (and women) are more likely to hunt, but the proportion of white men in the sample declined.
6. Only 2 factors are acting to offset the decline. Income is increasing and male hunters have higher incomes. The proportion of the male population in the Mountain region is increasing and a higher proportion in that region hunt.
7. The findings are quite different for females.
   a. The proportion of females hunting is increasing. The model predicts a 1.1% per decade increase. The observed increase was 1.2%.
   b. Socioeconomic variables had almost no effect over the 10-year period. The largest effect was the decline associated with age (-0.09%). The increase in female participation is due to other social changes.



Percentage reporting hunting 1980-1990 for household members 16 and older from the screener portion of the National Survey of Fishing, Hunting and Wildlife-Associated Recreation

Socioeconomic Determinants of **Hunting** for Males and Females 16 and Older: United States, 1980-1990, from Screening Surveys, for 1980, 1985 and 1990 National Survey of Fishing, Hunting and Wildlife-Associated Recreation

	Males			Females		
	Effect on Hunting[a]	10-Year Change[b]	10-Year Effect[c]	Effect on Hunting[a]	10-Year Change[b]	10-Year Effect[c]
Year						
1980	--	--	--	--	--	--
1985	-2.35*	--	--	-.18	--	--
1990	-2.14*	-2.14	-2.14	1.24*	1.24	1.24
Age (years)	-.42*	1.79	-.75	-.04*	2.32	-.09
College Graduate	-5.85*	.009	-.05	-.54	.037	-.02
Income $30,000 or more/year	2.93*	.047	.14	-.30	.059	-.02
Region						
North Central	7.28*	-.001	-.01	.30	.000	.00
South Central	12.46*	-.005	-.06	1.20*	-.002	-.00
Mountain	11.06*	.007	.08	1.07	.001	.00
South Coasts	1.57	.030	.05	-.04	.002	-.00
Married	5.40*	-.006	-.03	.99*	.018	.02
White	12.52*	-.019	-.24	1.67*	.002	.00
Small Town or Rural at 16	12.31*	-.075	-.92	.85*	-.037	-.03
R-squared	.092*			.010*		
Total Predicted Change			-3.93			1.10

Source: 3% random sample of NSFHWAR Screening Surveys.
N = 9,150 males, 9,917 females 16 years and older.

[a] Unstandardized ordinary least squared regression coefficients, effect on percent (0-100) who hunted in past year. Models include controls for proxy report and personal interview. Analyses used weighted data, approximately 16% nonresponse (primarily due to income nonresponse).

[b] Difference between 1990 and 1980.

[c] 10-year change in percent who hunted during past year attributed to variable.

*p < .05, two-tailed t-test.

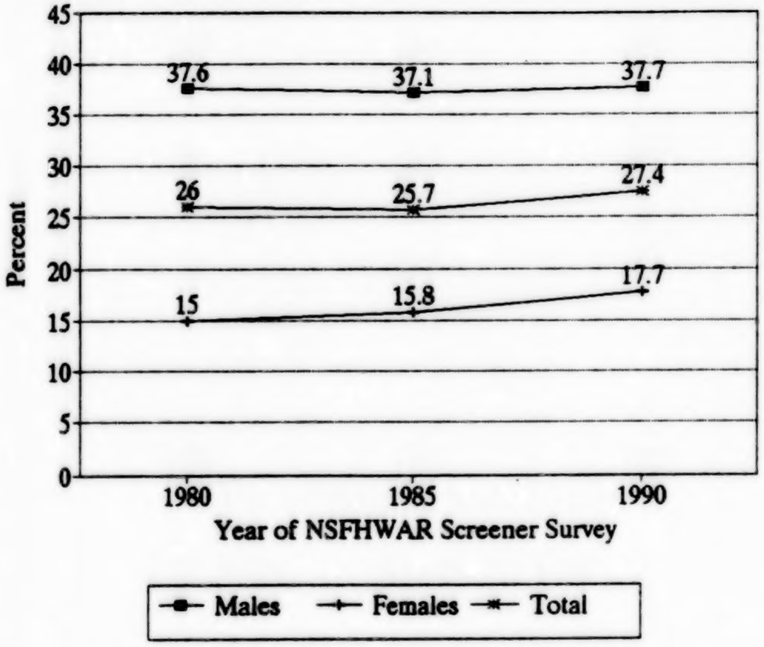
Fishing

Fishing General Rates

1. The overall percentages show a slight increase from 26% in 1980 to 27.4% in 1990, but as in hunting this masks a very important interaction by gender.
2. The percentage of males reporting fishing in the last year remained relatively stable over the decade at approximately 37%.
3. The percentage of females fishing from 1980 to 1990 increased from 15.0% to 17.7%, or a 18% increase off a base of 15.0%.

Factors Associated with the Changes in Fishing

1. For males, the general model predicts a very small increase, from 37.6% in 1980 to 37.7% in 1985.
2. The largest determinants of male fishing decline are increasing age (-0.90%), fewer men growing up in rural areas (-0.53%), and a decreasing proportion white (-0.30%).
3. These factors influencing decreases are offset by increasing income (0.39%) and more men living on the southern coasts (primarily Florida and California).
4. For females, the model predicts a 2.0% increase per decade in fishing. The observed increase was 2.7%.
5. Age, education, and urban socialization all tend to reduce female participation in fishing.
6. There is a strong role of social factors outside the model as influences on increased participation of females from 1980-1990.



Percentage of screener reports fishing 1980-1990 for household members 16 and older from National Survey of Fishing, Hunting and Wildlife-Associated Recreation

Socioeconomic Determinants of Fishing for Males and Females 16 and Older: United States, 1980-1990, from Screening Surveys, 1980, 1985 and 1990 National Survey of Fishing, Hunting and Wildlife-Associated Recreation

	Males			Females		
	Effect on Fishing[a]	10-Year Change[b]	10-Year Effect[c]	Effect on Fishing[a]	10-Year Change[b]	10-Year Effect[c]
Year						
1980	--	--	--	--	--	--
1985	-2.19*	--	--	.86	--	--
1990	.40	.40	.40	2.88*	2.88	2.88
Age (years)	-.50*	1.79	-.90	-.29*	2.32	-.67
College Graduate	-5.31*	.009	-.05	-.36	.037	-.13
Income $30,000 or more/year	8.36*	.047	.39	1.25	.059	.07
Region						
North Central	10.84*	-.001	-.01	6.78*	.000	.00
South Central	15.21*	-.005	-.08	13.13*	-.002	-.03
Mountain	11.96*	.007	.08	7.97	.001	.01
South Coasts	9.94*	.030	.30	7.78	.002	.02
Married	7.62*	-.006	-.04	5.87*	.018	.11
White	15.95*	-.019	-.30	9.32*	.002	.02
Small Town or Rural at 16	7.08*	-.075	-.53	3.19*	-.037	-.12
R-squared	.075*			.048*		
Total Predicted Change			-.07			2.02

Source: 3% random sample of NSFHWAR Screening Surveys.
N = 9,150 males, 9,917 females 16 years and older.

[a] Unstandardized ordinary least squared regression coefficients, effect on percent (0-100) who fished in past year. Models include controls for proxy report and personal interview. Analyses used weighted data, approximately 16% nonresponse (primarily due to income nonresponse).

[b] Difference between 1990 and 1980.

[c] 10-year change in percent who fished during past year attributed to variable.

*p < .05, two-tailed t-test.

Appendix A • Multivariate Analysis Methodological Background

Rural-Urban Residence

One of the potentially key determinants of hunting and fishing, rural-urban residence, was not coded in the same way across all 3 years, and some of the information on coding is unclear. Attempts were made to create comparable measures, but these measures were found to affect the rural-urban variable differently for different years. NSFHWAR staff inform us that comparable data (e.g., metro area codes used in each summary report) are not on the public use tape for reasons of confidentiality. The notes below summarize the data that are available on the public use tape.

Data for 1980 and 1985 include "Census Definition" codes for rural and urban (2 categories). 1990 has a code named "FARM," which does not appear on the questionnaire nor in any interviewer instructions, and its source is not clearly identified in the codebook. NSFHWAR staff were unable to identify this variable. The variable has 3 categories, rural-farm, rural-nonfarm, and urban.

In 1980, the Census urban-rural codes are not defined for 3 states (Nevada, Wyoming, Alaska) and a very few number of cases in other states, about 4% of all cases. Nonreporting is due to the rules about not releasing geographical information when too few persons are in the identified area. In 1985, however, more than 40% of records are not coded, including the entire state for a larger number of states, and relatively large proportions of cases in other states. The FARM variable in 1990 has a value for all cases, which casts doubt on this variable as a Census code.

The percentage urban (among coded responses) in all 3 years is very similar, slightly increasing across years as expected.

1985 and 1990, but not 1980, also have a self-report with 3 categories, urban area, small town, rural area. There is, of course a strong association between self-reports and the Census codes in 1985, and between self-reports and the FARM variable in 1990, but it's not perfect. The self-reports show that it cannot be assumed that all cases in the states that were not coded for rural-urban are either rural or urban -- the majority of cases in these states perceive themselves to be living in urban areas, as in other states.

Income Measures

NSFHWAR income data is collected in categories, with more detailed categories at the lower end in 1980, 1 additional category at the higher end in 1985 and 1990. In addition, of course, inflation changes the meaning of the category boundaries. This summarizes our method of creating comparable income in 1990 dollars across the 3 years, 1980, 1985, 1990.

Data from the March Current Population Surveys in 1981, 1986, and 1990 were used, taking reports of household income for the previous year. Within each of the categories used for NSFHWAR, the category median was produced (virtually identical to the mean, except for the lowest and highest categories), weighted by the person weight. The median was assigned to categories reported for each person in the survey and the Consumer Price Indices for 1980, 1985, 1990 were used to adjust all values to 1990 dollars.

Unweighted distributions of households by 1990 adjusted income categories show that self-reported category income in NSFHWAR slightly underestimates income reported in the March CPS. Since differences are very similar across years, this should not bias effects of income in terms of accounting for changes in hunting or fishing.

Background Information

An Overview of the 1991 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation[1]

Introduction
In December 1989, the Fish and Wildlife Service (FWS), U.S. Department of the Interior, forwarded to the Bureau of the Census questionnaire drafts for the 1991 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (FHWAR). This was the beginning of a $15 million cooperative effort between the two agencies.

The 1991 survey is the eighth in a series of surveys that began in 1955. The Census Bureau conducted all but the 1955 and 1975 surveys. Although the Fish and Wildlife Service sponsors the survey, they do so at the request of the International Association of Fish and Wildlife Agencies. Funding for the survey comes from excise taxes on sporting arms, ammunition, fishing equipment, and motorboat fuels collected under the Federal Aid in Sport Fish and Wildlife Restoration Acts. Federal and state fish and game agencies use the data from these surveys to estimate demands for wildlife recreation, identify trends in participation and expenditures, and plan conservation and restoration programs. It is the only comprehensive data base of uses and users of fish and wildlife resources, and provides comparable data on a state by state basis.

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[1] Source: U.S. Bureau of Census

The 1991 survey was quite different from the previous surveys; three detailed interviews were conducted instead of one and the way the sample participants were identified and selected was changed. The FWS made these changes because the length of recall (up to 18 months) in the 1980 and 1985 surveys biased the detailed activity and expenditure information. This was proven in a test of different recall lengths conducted by WESTAT, Inc. for the FWS after the 1985 FHWAR. After considering and having the Census Bureau cost out several interviewing strategies the FWS decided to interview each of the sample participants three times at four-month intervals to collect the detailed information on fishing, hunting, and nonconsumptive wildlife-related recreation activities. The first two interviews were conducted during the survey year (1991) and the third interview in January-February 1992. This interviewing design also forced us to revise the way the sample participants were identified during the screening interview. In the previous surveys the screening was conducted after the survey year (e.g., in 1986 for the 1985 survey) and thus were able to identify and select participants based on their experiences of the past year. In 1991, however, the screening was conducted at the beginning of the survey year and had to identify and select participants based on assumptions and expectations. For example, if a person told us he or she fished or hunted in 1990, it was assumed the person would fish or hunt in 1991. Furthermore, if a person did not fish or hunt in 1990, he or she was asked if they thought they would fish or hunt in 1991.

The Screening Operation

General -- The screening operation was conducted during January and February of 1991 using a national sample of 129,146 addresses of which 9,874 of these addresses were for an Annual Recall Study. The main purpose of the screener was to identify persons aged 16 and older who engage in recreational fishing, hunting, and other wildlife-related activities so that a sample of these persons could be selected for a more in-depth interview of their activities. Information was collected on their expenditures and days of activity in order to determine levels of participation. In addition, basic socioeconomic information was collected from each interviewed household such as age, income, and employment status. Ninety-five percent of all eligible households were interviewed, and 68% of the interviews were completed by telephone.

Sample Design -- The screening sample consisted of expired Current Population Survey (CPS) housing units. The Census Bureau selected these samples for CPS from 1980 Decennial Census files with coverage in all 50 states and the District of Columbia. During CPS interviewing, the Census Bureau continually updated these samples to reflect new construction. The sample addresses were located in 729 areas comprising 1,973 counties, independent cities, and minor civil divisions. For the 1991 FHWAR, units identified in CPS as interviewed or noninterviewed use were included. The Field Representatives asked the screening questions of the U.S. civilian noninstitutional population aged six years and older and military personnel not residing in barracks.

For the 1991 survey, the FWS wanted to approximate levels of reliability for the estimated number of hunters in each state as in the 1985 survey. The projected coefficient of variation (standard error divided by the estimate) on the estimated number of hunters, aged 16 and older, within a given state (excluding the District of Columbia) averaged 7.4%. This was slightly higher than their respective 1985 values. The coefficient of variation on the estimated number of hunters within the nation from the annual recall sample is approximately 3.2%.

Questionnaires -- Two questionnaires were used in the screening operation; the FH-2A in 75% of the sample and the FH-2B in the remainder. Although the content of the two questionnaires was identical, the respondent was different. Two questionnaires were used because a household respondent could not accurately report another person's expectations. A household respondent was used for the FH-2A and a combination of household respondent and self respondent was used for the FH-2B. As in the past, letters were also mailed to each of the sample households to inform them that our field representatives would be calling. A separate letter was developed for each of the two types of respondent households. Although their content was similar, a request was included in the letter to the household respondents that the household members discuss with each other their previous and intended participation in fishing, hunting, and nonconsumptive wildlife-related recreation activities. The household respondent was a knowledgeable household member at least 18 years old who answered the questions for all household members. This was similar to the one used in the 1980 and 1985 surveys. On the FH-2B, members of the household who were 16 years old and older responded for themselves about their individual hunting, fishing, and nonconsumptive wildlife-related recreation activities while a household respondent answered for persons less than 16 years old and the basic questions pertaining to the household. If a self-response interview was not obtainable, field representatives accepted proxy responses. As a result of using these two methodologies, it will be possible to analyze the screening information for differences in the numbers of sportsmen and nonconsumptive users identified and selected for the detailed samples. This information will help the FWS determine whether to use self response or household response when designing future surveys.

Field Representative Training -- Approximately 1,600 field representatives conducted the screener interviews. All the field representatives completed an eight-hour to ten-hour self-study and inexperienced field representatives received an additional 1-1/2 days of classroom training. The training consisted of general information about the survey, how to locate sample persons. how to use the telephone to obtain interviews, a "walk-through" of the questionnaires, exercises on survey concepts, and information about types of noninterviews.

Clerical Editing and Keying -- Each week the field representatives mailed their completed cases to their Regional Office. Clerks in the Regional Office edited certain items on the questionnaires. If these items were blank or filled incorrectly, the clerk called the field representative or sample household to obtain the missing information. For example, if days of hunting was blank for persons who hunted in 1990, the clerk contacted the field representative or household. After editing, the Regional Offices sent the forms to our central processing facility in Jeffersonville, Indiana where a staff of 40 clerks edited and prepared them for data keying. Jeffersonville clerks entered, for example, numerical state codes when state entries had been made. Finally, a staff of 75 people keyed the questionnaires to magnetic tape for computer processing. They also rekeyed each questionnaire; that is, there was a 100% verification of keying.

Preparation of File for Detailed Sample Selection -- Upon receiving the keyed data, the programming staff determined the interview status of each household and person, and assigned all interviewed persons 16+ years old to their detailed sampling stratum (see the detailed operation sample design). They then produced counts by state by strata so that the mathematical statisticians in the Statistical Methods Division could determine the state sampling rates for the detailed sample selection. After reviewing the rates, our programming staff selected the state samples of sportsmen and nonconsumptive users and produces files of these samples for labeling advance letters and questionnaires.

Computer Edits and Other Processing -- After detailed samples were selected, each record on the file was edited. The range edit corrected or blanked entries that were not within acceptable bounds and the consistency edit compared questionnaire entries and made the entries within each questionnaire consistent. The final processing phase was weighting the data. This consisted of applying the inverse of the sampling rate to each record, adjusting each interviewed record to account for the noninterviews, and a ratio adjustment to state population controls.

Time Frame -- Field Division completed interviewing on February

28, 1991. By May 1, 1991, Census staff has clerically edited and keyed the screener information, selected the detailed state samples, and labeled and distributed the detailed questionnaires to the Regional Offices for the first detailed interview.

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